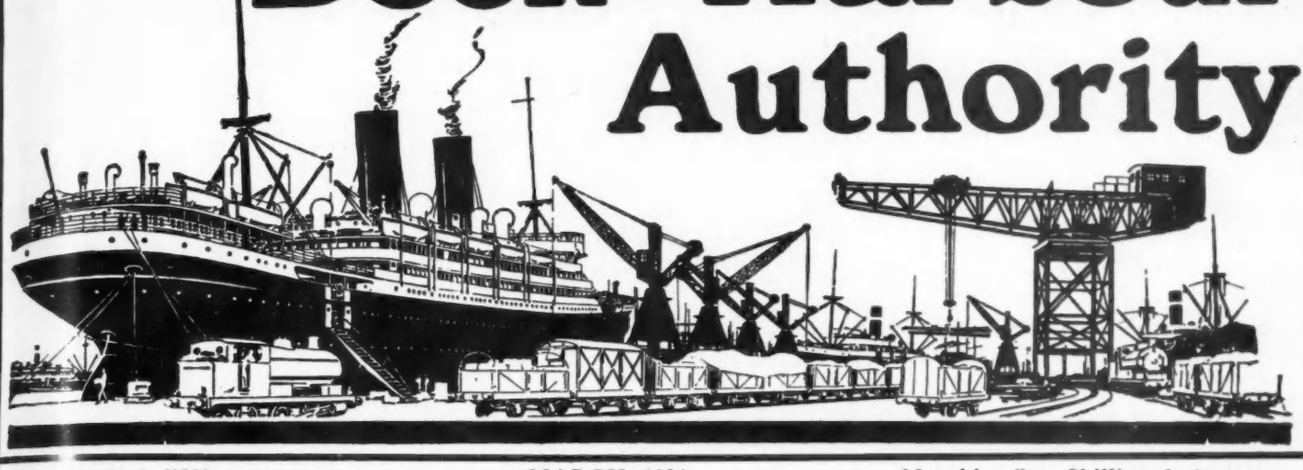
The Dock & Harbour Authority



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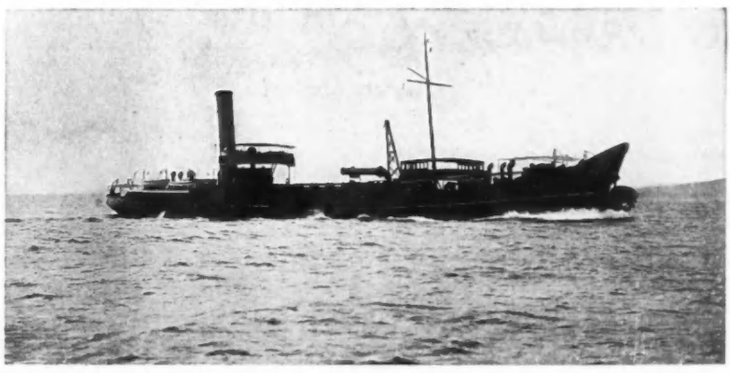

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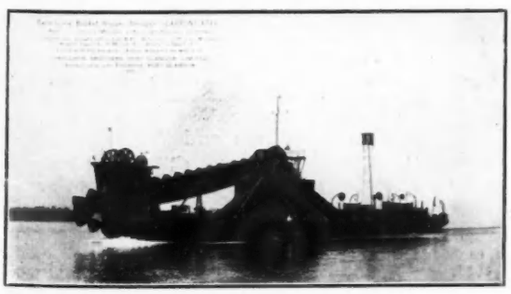

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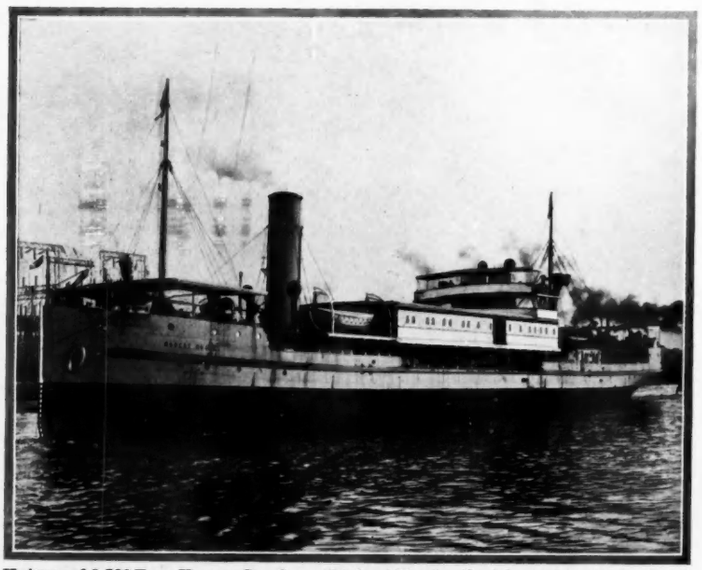

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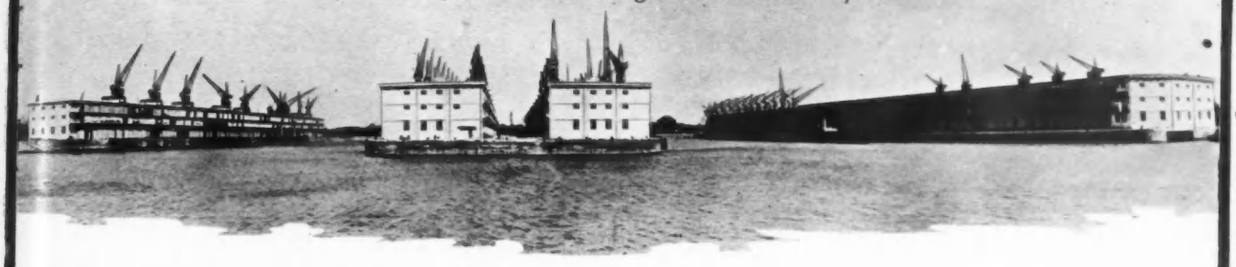

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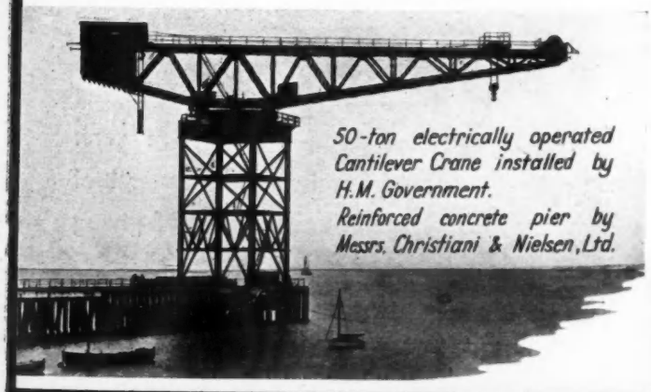

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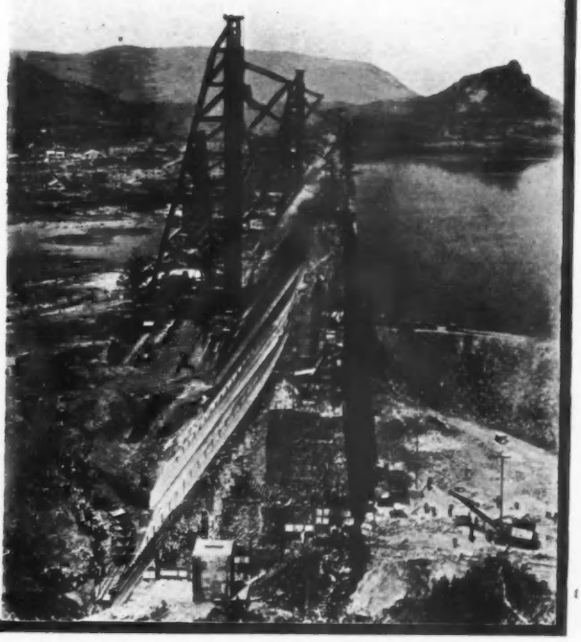

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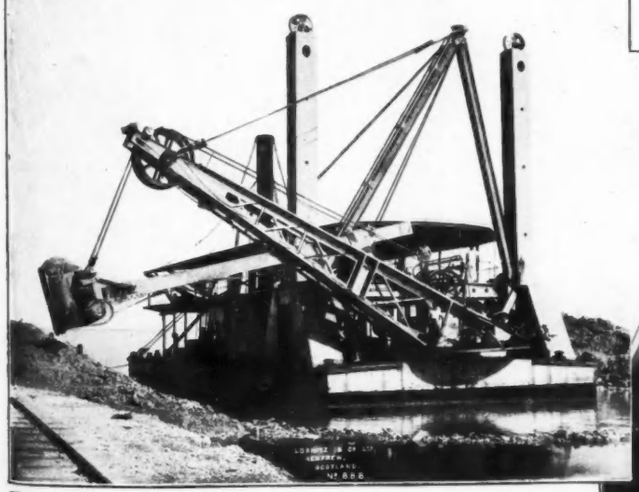

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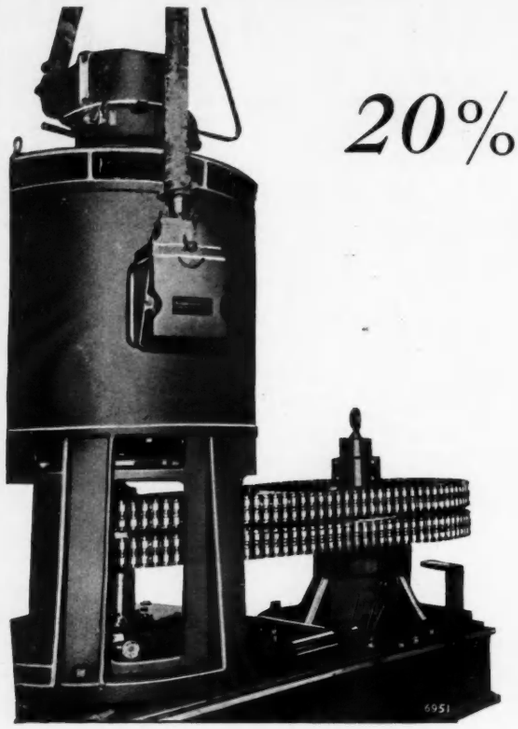

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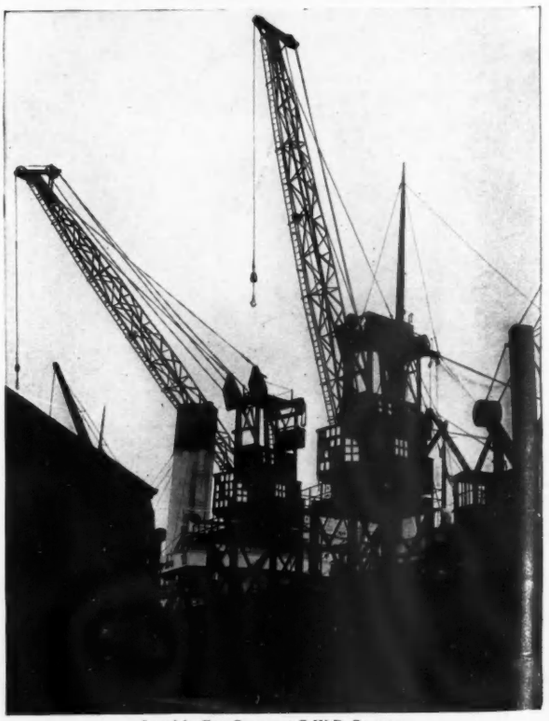

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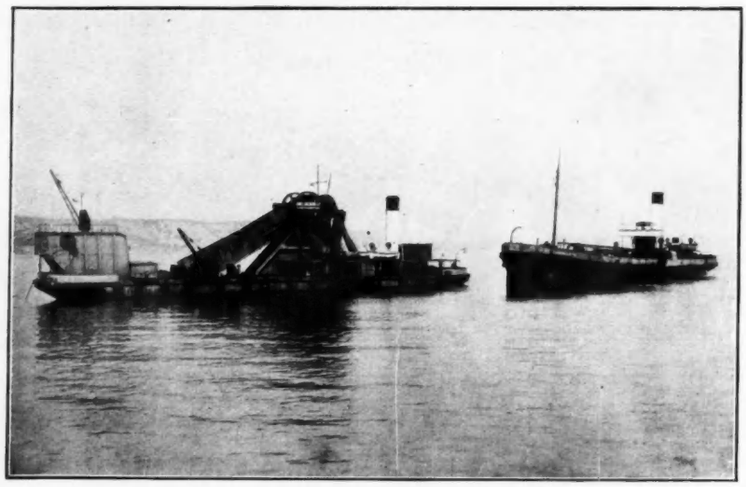

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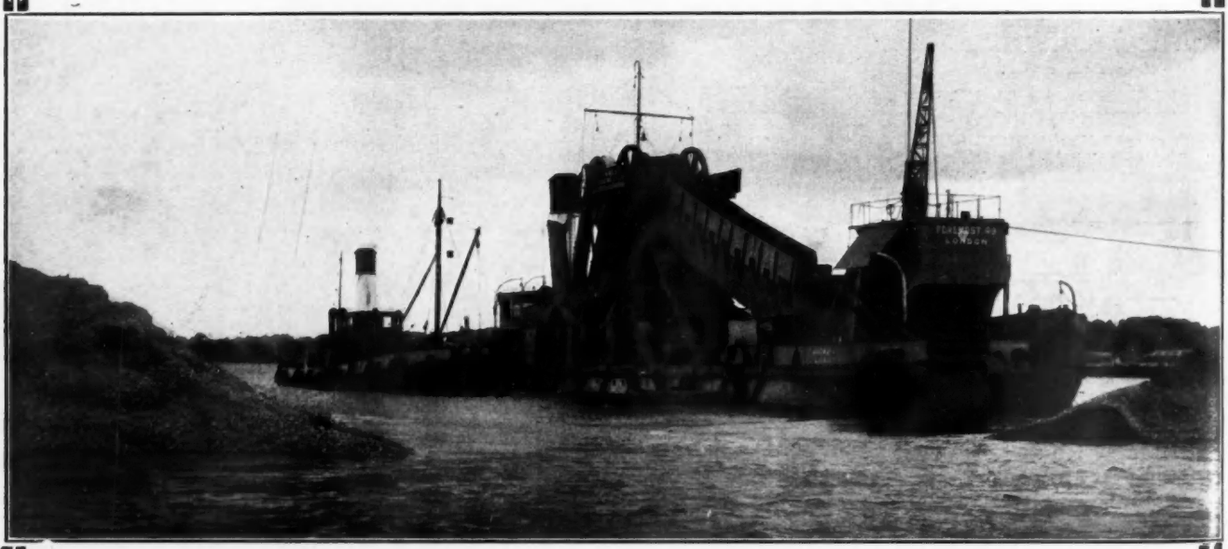

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Contributions which are to be paid for must be clearly marked thus; otherwise they will be considered gratuitous.

If intended for publication in the current month they must come to hand not later than the 20th of the preceding month.

The Editor cannot be responsible for the safety of or return of manuscripts forwarded on approval.

All letters referring to Advertisements should be addressed to the Advertisement Manager.

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CONTENTS.

EDITORIAL	131
NOTES FROM FAR EASTERN PORTS	132
NOTES FROM THE NORTH	133
ACCEPTANCE TRIALS OF THREE DOCK FIRE PUMPS	135
NORTH-EAST COAST NOTES	138
THE PORT OF COPENHAGEN	141
PORT OF SOUTHAMPTON TOPICS	151
OTAGO HARBOUR, NEW ZEALAND	151
THE PORT OF BORDEAUX	153
UNITED STATES AND CANADIAN PORTS STATISTICS	156
ADEN PORT TRUST	158
CLYDE NAVIGATION TRUST	159
BRITISH INDUSTRIES FAIR	161
PORT OF LONDON NOTES	161
FRENCH PORTS	162
THE PORT OF AMSTERDAM	162
HULL AND THE EAST COAST	164
THE PORT OF HALIFAX	164

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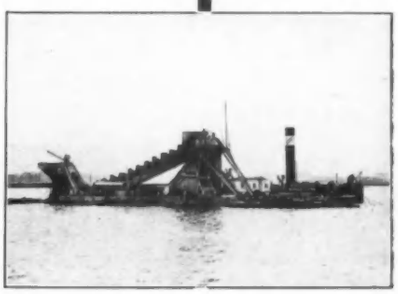

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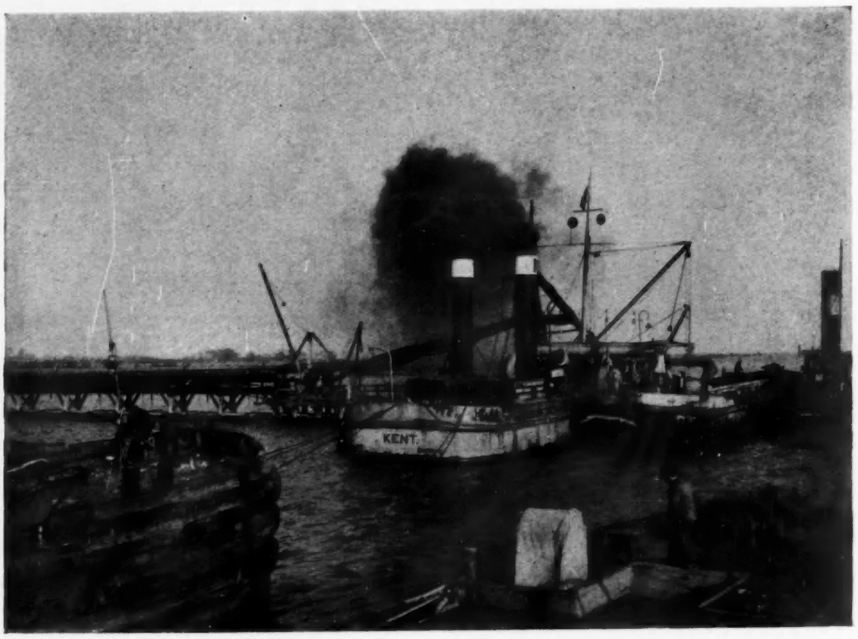

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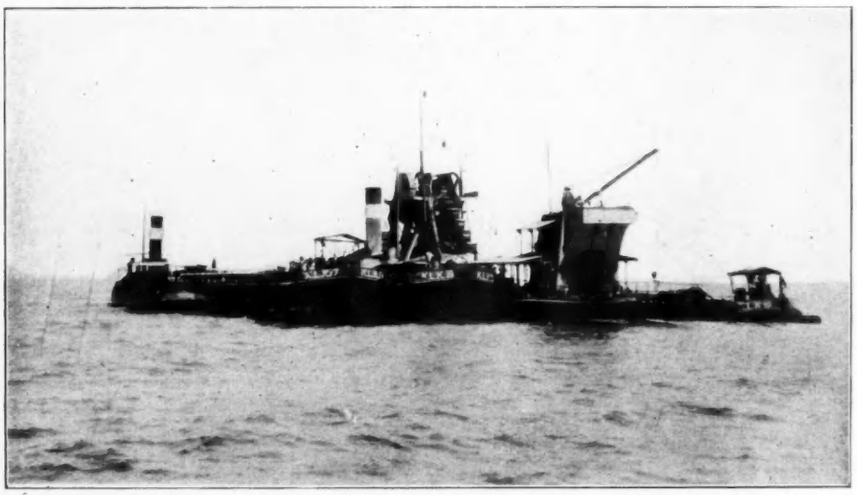

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THE DOCK & HARBOUR AUTHORITY

No. 161. Vol. XIV. MARCH, 1934

Editorial

Copenhagen: The Key to the Baltic.

Although founded in the twelfth century, the Port of Copenhagen is in all respects a modern one. Since the days when Bishop Absalon, the Danish national hero, built up its defences against the pirates of that time, it has developed in successive stages—and especially in the last fifty years—until it now extends for over five miles, from the northern breakwater to the isolating dam at its southern boundary, and has over 22 miles of quayage, including the Freeport—concerning which we propose to give an account next month to supplement the description of the Customs Port appearing in the present issue.

The essential feature of the port, physically, is the long, narrow channel lying between the mainland and the Island of Amager; which, from the earliest times, formed a natural haven of refuge, and still, though spanned by two opening bridges, provides a means of direct communication between the various sections of the extended port. This sheltered water, in communication with the deep and almost tideless Sound, provided an initial advantage which has been developed to the full. The port also enjoys a very favourable geographical position, and being now a self-governing and self-supporting institution, its surplus revenue is devoted exclusively to its own development and to the reduction of charges on shipping.

Port of London: Shipping Increases in 1933.

Shipping at the Port of London during 1933 showed an improvement over 1932, there being an increase of nearly 5 per cent. in the tonnage figures of vessels using the port.

In 1933, 55,813 vessels arrived at and departed from the Port of London, as compared with 51,209 vessels in 1932. The net registered tonnage figures for 1933 were: Foreign 39,971,047 as compared with 38,002,239 in 1932, and coastwise the net registered tonnage figures for 1933 were 16,513,572 as compared with 15,901,647 in 1932. The total net registered tonnage figures for 1933 were therefore 56,484,619, as compared with 53,903,886 net registered tons in 1932.

Increased Trade at Avonmouth necessitates additional Equipment at Eastern Arm.

The continued development of the oil trade of the Port of Bristol, due to the increasing number of installations at Avonmouth, has necessitated the complete allocation of the extensive Oil Wharf at the Western Arm of the Royal Edward Dock to this important industry. Some years ago, before the oil trade had assumed its present dimensions, and with a view to affording relief to the other berths at Avonmouth, the Authority installed four 3-ton cranes at this particular wharf, to enable whole cargoes of concentrates, timber, etc., to be dealt with there, when the wharf was not being used by oil vessels.

In recent months, however, it has been found that the more frequent arrivals of tankers has resulted in this wharf not being available for other purposes. Extra accommodation had therefore to be found, and it has been decided to transfer these cranes in the oil basin to the West side of the Eastern Arm. This side was not equipped when the Eastern Arm extension was opened, it being left for development as necessity arose. The water space, however, has been fully utilised of recent years by vessels lying-up and under repair.

By this scheme a berth 600-ft. long will be equipped for the handling of bulk cargoes and concentrates, timber, etc. Railway sidings will be provided, enabling expeditious handling direct from ship to railway truck. In addition, facilities will be available, which will also enable traffic to be worked direct from ship to road vehicles. This will be effected by diverting the road at present running along the quay wall to a position further back but still within the plumb of the cranes.

There is a considerable amount of floating repair work carried out at Avonmouth. Under this scheme the crane road will be carried 350-ft. beyond the quay berth to enable one or more of the cranes to be moved down when available for repair work on vessels alongside the adjoining length of quay, a facility which will undoubtedly be appreciated by ship repairers.

The continued expansion of trade at Avonmouth may soon require consideration being given to the question of providing transit sheds, warehouses, etc., at this part of the dock.

The Dock and Harbour Authorities' Association: Annual General Meeting.

The Dock and Harbour Authorities' Association held their annual general meeting for the year ending December 31st, 1933, at the Hotel Metropole, Northumberland Avenue, W.C.2, on Wednesday, February 28th, when the Annual Report was presented and adopted.

Lord Ritchie of Dundee presided over the meeting, owing to the death of Sir William Crundall, Chairman of the Dover Harbour Board and President of the Association for 1933, who died on Sunday, February 25th.

The Association during 1933 comprised 52 Authorities, five new Authorities having joined the Association during the course of the year. Lord Ritchie of Dundee hoped that they would be obtaining more new members during the year 1934 and so strengthen the position of the Association in dealing with matters appertaining to docks and harbours.

Several cases of vital interest to Dock and Harbour authorities had been taken up during the course of 1933, and notable amongst these was the Road and Rail Traffic Act, 1933, Part II. of which deals with the right of the Railway Companies, with the approval of the Railway Rates Tribunal, to make agreed charges for the carriage of merchandise, and the Association had put forward an amendment for the purpose of protecting Dock and Harbour Authorities from being put under an undue disadvantage by these agreed charges.

Another matter which had been taken up by the Association during 1933 concerned the levying of rates on seaplanes, hydroplanes and similar craft, landing on the water area of docks and harbours.

The Hon. Secretary of the Association, Sir William C. Thorne, acting on medical advice, had resigned his position in October, 1933, and in order that his connection with the Association should not be entirely severed, the Committee had asked him to accept the honorary position of Consulting Solicitor.

The officers for the ensuing year were appointed as follows: President, Dr. Thomas Cowan (Chairman of the Leith Dock Commission); Vice-Presidents, Lord Ritchie of Dundee (London), Mr. R. D. Holt (Liverpool), Mr. W. F. Robertson (Clyde), Sir Ernest Herdman (Belfast), and Mr. Alfred Watkins (Manchester).

Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., was again elected Parliamentary Chairman for the Association for 1934.

The following members were elected to the Executive Committee for the ensuing year:—Lt.-Col. T. G. Poole (North East Coast of England); Sir David J. Owen (London District and South Coast); Mr. R. H. Jones (Bristol Channel); Mr. J. G. B. Beazley (Liverpool and North West District); Mr. F. A. Evre (Manchester Ship Canal); Mr. G. W. Service (West Coast of Scotland); Sir John Irvin (East Coast of Scotland); Mr. M. I. Watkins (Northern Ireland); and Mr. William Hewat (Irish Free State).

Notes from Far Eastern Ports

Modernising Colombo Port.

IT is understood that a proposal is under consideration for the appointment of a Harbour Engineering expert to investigate and report upon extensions and improvements to the Colombo Harbour in order that the port might keep pace with the modern requirements of shipping and commerce.

Schemes of improvement are understood to have been already prepared by the Colombo Harbour Engineer and submitted to the Consulting Engineers of the Ceylon Government in England for their consideration.

It is learned that the consulting Engineers have recommended a thorough investigation of the requirements of the port on the spot by an expert.

The port authorities in Ceylon are reported to be in favour of these schemes of improvement being carried out as early as possible owing to the increasing competition being afforded the Port of Colombo by the Port of Cochin in South India.

Many of the shipping lines operating in Colombo are also said to have made representations to the authorities for the modernisation of the port.

Emphasis is understood to have been added to the urgency of the situation by the growing displacement of coal-burning vessels by oil-burning and turbo-electric liners, whose increasing size and draught are making fresh demands upon the facilities of the Port of Colombo.

It is feared that if the increase in shipping traffic in Colombo Harbour last year is further augmented in the future the ability of the port to meet the situation will be severely strained.

Practically all the new ships being built in the world's shipyards to-day are motor or turbo-electric vessels, and this factor is understood to require fresh adjustment in the Port of Colombo.

Wet Dock Scheme Revived.

The old Wet Dock project suspended ever since the war began is reported to have been revived in the need for deep-water quays at which large passenger vessels may anchor.

The needs of commerce are also pressing in the way of quicker methods of loading and unloading cargo.

In the Port of Cochin, 200 miles north of Colombo, modernisation is reported to be under full weigh. A scheme is at present in preparation for the provision of better facilities for shipping by the extension of the railway across the backwater to the reclamation area in the middle of the harbour, where wharves, warehouses, and a railway terminus can be constructed. This will enable ships, which at present lie in mid-stream to discharge their cargo direct into railway waggons or warehouses, and passengers will embark direct from train to ship.

Colombo Port's Warehouse Rent in 1933.

Warehouse rent collected at the Port of Colombo last year amounted to Rs. 576,371.03, which was less by Rs. 47,556.22, when compared with the 1932 sum. The 1932 total was Rs. 48,018.80 less than the 1931 collection. The last four years' amounts were:—

Year	Rs.
1933	576,371.03
1932	623,927.25
1931	671,946.05
1930	790,115.18

Lake-to-Harbour Dues.

Lake-to-Harbour dues in Colombo contributed to the Colombo Port Commission revenue a larger amount in 1933 than in the previous year, the difference, compared with Rs. 20,250.60 of 1932, being Rs. 4,388.27 more. The gross receipts for the last three years were:—

Year	Rs.
1933	24,638.87
1932	20,250.60
1931	24,178.87

Coal Shipments to Colombo.

Coal shipments to Colombo were heavier in 1933 than they were in 1932, the difference in quantity being 54,870 tons. Last year's imports totalled 404,916 tons, of the value of Rs. 7,498,366, while in 1932 the trade accounted for 350,046 tons, valued at Rs. 6,782,246. A feature of the local coal traffic was the increased business done with the United Kingdom, the 1933 imports being 44,190 tons (Rs. 1,171,061), against 32,678 tons (Rs. 861,966) previously. On the other hand, while trade with India and South Africa in this regard was maintained, business with Portuguese East Africa diminished to the extent of 5,827 tons (Rs. 139,462 being the value of the difference in the traffic).

New Records set up by Colombo Harbour last year.

Figures prepared by the Colombo Port Commission show that conditions in the Port of Colombo last year showed a distinct improvement on those which existed in 1932, and new records in exports and imports and the handling of cargo through the Lake to Harbour Canal have been set up.

The largest quantity of cargo exported via the Lake to Harbour Canal in any one month since the opening of the Locks in November, 1922, was in October, 1933, when 7,054 tons were handled.

Another port record was set up last year when, for the first time since the oil facilities were made available in February, 1922, the largest quantity of liquid fuel imported in any one month was in March last. The quantity imported that month was 48,692 tons.

In the same month, March, last year 23,786 tons of liquid fuel bunkers were supplied to ships in port. This was the largest quantity supplied in any one month since February, 1922.

Imports and Exports.

The tonnage of imports and exports at the Port of Colombo, in November last, compared with the corresponding month in 1931 and in 1932 also shows that trade has been better last year than in the two previous years. The tonnage of imports and exports at this port during the period specified was:—

	Nov. 1931 Tons	Nov. 1932 Tons	Nov. 1933 Tons
Imports (excluding coal and oil)	76,532	55,995	83,075
Exports	63,916	49,493	58,000
	140,448	105,488	141,075

Pilotage Revenue of Colombo Port in 1933.

The revenue the Colombo Port derived from pilotage in 1933 amounted to Rs.265,175.15, representing an increase of Rs. 421.25 over the 1932 collection. The following statistics showing pilotage figures for the years mentioned are interesting:—

Year	Rs.
1933	265,175.15
1932	264,753.90
1931	281,770.80
1930	290,351.03
1925	221,150.00
1924	217,278.69

Colombo Port's Finances.

Financially, the Port of Colombo did not have such a successful year in 1933 as in the previous twelve months, the revenue of the harbour dropping from Rs. 5,141,488.42 in 1932 to Rs. 4,939,540.84, though the collections on account of Lake-to-Harbour traffic and Pilotage had increased. The statistics for the past four years are as under:—

Year	Rs.
1933	4,939,540.84
1932	5,141,488.42
1931	5,389,776.66
1930	5,771,566.27

It will thus be seen that the revenue has been gradually decreasing. Dues leviable at outports, such as Galle and Trincomalee, are omitted from the above calculations.

Port of Colombo in 1933.

Figures available at the Master Attendant's Department since 1913 show that the highest average gross tonnage for merchant ships entering the Port of Colombo for the last 21 years was reached in 1933, when 2,544 ships with a total tonnage of 19,297,859 brought the average gross tonnage to 7,586.

As no reductions have been made in port dues during the past year, the excess in the gross tonnage as compared with other years represents an increase in revenue.

In the previous year, 1932, the number of ships which called at Colombo totalled 2,575. Although this figure exceeds last years' total of 2,544 ships by 31, yet the total tonnage for 1933 exceeded that of the previous year, owing to the accommodation of several big liners.

In 1922 the number of arrivals was 2,576, with a tonnage of 19,047,243, making the average gross tonnage 7,397.

Notes from Far Eastern Ports—continued

A Good Year.

The statistics for 1933, published below, show that, considering the critical stage which world shipping is passing through, the past year has been a good one for the Port of Colombo, and compares most favourably with other years in the number of callers of various nationalities, as well as being a record year where tonnage is concerned.

A comparison of some of the figures with those for 1932 is interesting. Last year, ships representing 15 nationalities called at Colombo, while in the previous year ships of 12 nations entered the port. The number of British merchantmen to call in 1933 was 1,524, or more than half the total number of arrivals for the year.

If the number of ships of other nations which called at Colombo during the year is any indication of the increase or decrease of trade between that country and Ceylon, it may then be noted that Germany, a country which in 1932 had 195 callers here and was third on the list, last year ousted Japan, who had 204 arrivals in 1932, from second place. While 204 Japanese ships called at Colombo in 1932, only 169 entered the port last year. Germany, on the other hand, had 195 arrivals in 1932 and 193 in 1933. France and Italy, fourth and fifth on the list in 1932, are now sixth and fifth. Holland, sixth, with 124 ships in 1932, is now fourth, with 143 ships.

Twelve Russian ships called in 1932 and nine last year. The biggest ship to enter Colombo Harbour last year was the Canadian Pacific Liner " Empress of Britain " (42,348 gross tons). In 1932 also this liner was the biggest ship.

The number of British warships by far exceeds those of other nations. The total number of foreign warships was six and British warships 59. Six British transports and one Italian passed through.

Port of Colombo Statistics for 1933.

MERCHANT SHIPS
(Steam and Motor)

Nationality	No. of Arrivals	Tonnage
British	1,524	10,943,836
German	193	1,454,933
Japan	169	1,355,258
Dutch	143	1,561,255
Italian	130	1,207,403
French	125	1,407,150
Norwegian ...	124	497,641
American ...	49	400,898
Danish	36	213,526
Swedish	35	199,042
Russian	9	29,307
Greek	4	17,688
Finnish	1	5,785
Czechoslovak ...	1	3,510
Belgian	1	627
Totals ...	2,544	19,297,859

WARSHIPS

Nationality	No. of Arrivals	Tonnage
British	59	233,390
Italian	2	7,450
German	1	5,341
Portuguese ...	1	1,760
Dutch	1	1,450
French	1	888
Totals ...	65	250,279

TRANSPORTS

Nationality	No. of Arrivals	Tonnage
British	6	55,814
Italian	1	3,388
Totals ...	7	59,202

The Port of Rangoon.

The Rangoon Port's working for the past fiscal year, 1932-1933, resulted in an excess of expenditure over income amounting to Rs. 193,543. Compared with the previous year, income shows a decrease of Rs. 584,919, and expenditure a decrease of Rs. 777,660. The total expenditure during 1932-1933 of the Port of Rangoon was Rs. 936,798, which, among other items, includes Rs. 547,282 for the cost incurred before 1932-1933 on works completed during the year, and Rs. 97,950 for the final instalments of purchase price of the tug, " Chinthe." Rs. 81,570 was spent on investigations of the Outer Bar, including the Tidal Model, and Rs. 137,585 on the smaller works.

The total net tonnage of steamers entering the Port of Rangoon during the year 1932-1933 was 4,100,169 tons—466,822 tons less than the previous year, which was a record. Of the 1,591 vessels that entered, 936 came alongside the Commissioners' wharves and jetties for the purpose of disembarking passengers and discharging cargo, as compared with 962 last year. The sea-borne trade of the Port amounted to 4,623,286 tons, representing a decrease of 539,085 tons, or approximately 10 per cent., compared with last year, and is the lowest recorded since 1924-1925. Of this total, 1,477,311 tons passed over the Commissioners' premises—109,082 tons less than the previous year. The tonnage of river and rail-borne traffic over the Commissioners' premises suffered a further decline.

Rangoon Port's Passenger Landings in 1933.

In 1933, 259,365 passengers by sea landed at the Port of Rangoon, and 232,444 embarked from the Commissioners' wharves and jetties, as compared with 248,467 and 298,072 respectively, for the previous year. The total revenue derived in 1932-1933 from warehouses and magazines showed a slight increase in 1933, receipts being Rs. 73,609, against Rs. 69,035 in the previous year. The tonnage received into the duty-paid and bonded warehouses show an increase of 1,925 tons over the total of the previous year.

Considerable hydrographic surveys and examinations of the shoals and crossings were carried out in 1932-1933 in the interest of the Port of Rangoon.

Bombay Port Trust.

Imports and Exports at the Port of Bombay:—

	1932 Quarter ended 31st December			1933 Quarter ended 31st December		
	Import Tons	Export Tons	Total Tons	Import Tons	Export Tons	Total Tons
Docks ...	454,463	415,221	869,684	434,691	434,773	869,464
,, (transshipment)	19,313	30,617	49,930	28,278	40,014	68,292
Bunders ...	257,731	75,532	333,263	255,189	80,464	335,653
Total ...	731,507	521,370	1,252,877	718,158	555,251	1,273,409
Total from 1st Apr. to 31st Dec.	2,034,894	1,298,120	3,333,014	2,181,413	1,673,008	3,854,421

Vessels other than ferry steamers, hired transports, Government vessels and country craft, which entered the Port of Bombay:—

	Quarter ended 31st December, 1932		Quarter ended 31st December, 1933	
	No.	Net Register Tonnage	No.	Net Register Tonnage
Vessels engaged in foreign trade ...	217	968,787	220	988,726
Vessels engaged in coasting trade ...	709	560,720	669	516,192
Total from 1st April to 31st Dec. ...	2,066	4,179,920	2,100	4,390,683

Weser River Shipping in 1933

In the year 1933 it is reported that the continual shrinkage in Weser traffic was arrested and showed a slow improvement. While this improvement was confined in the beginning to goods traffic on the Upper Weser, later it extended also to the more important traffic with Bremen and the Lower Weser ports. The ice disturbances in December, however, considerably influenced the 9 per cent. increase in traffic shown up to the end of November.

With regard to water conditions, the position is described as unsatisfactory. On the Upper Weser the water level only permitted full loading on 52 days, and on the Middle Weser only on 87 days. It must also be remembered that during the year 1933, contrary to the three previous years, unusually considerable blockage through ice took place, whereby shipping in January and February was affected on 12 days, and in December on so many as 27 days. Consequently, there were only 73 days on which full loading of barges was possible between Minden and Bremen, against four and six and a half months in 1932 and 1931 respectively.

In through traffic through the Bremen Weser lock goods carried in both directions in 1933 were 1,370,800 tons, against 1,381,000 tons in the previous year. From the 1st January to the beginning of the blockage on the 5th, 1,370,000 tons had been carried, while during the same period of the previous year only 1,250,000 tons had passed.

Downstream traffic at 1,033,200 tons was 18,100 tons, or 1.8 per cent., more than in 1932. Chiefly stone shipments have increased, i.e., by almost 86 per cent. This is due to transport of quarry stones for strengthening shores, etc., in connection with the public works programme. Piece-goods and cement arrivals were also larger. Coal, on the other hand, decreased considerably by almost 13 per cent., and potash salts by 11 per cent. Without the four weeks' blockage in December, these two reductions would have been considerably smaller, for potash salts up to the end of November were slightly above the previous year's figures, while the loss in coal up to then was not quite 4 per cent. Upstream the quantity carried was 337,600 tons, and thus 29,200 tons, or 8 per cent. less. The development of the various kinds of goods changed considerably. Grain transports decreased by 53 per cent., flour by 33 per cent. On the other hand, timber transports were 35 per cent. larger. Imported coal, phosphate, pyrites and piece-goods were also carried in larger quantities and, furthermore, there was a new traffic in scrap and rice shipments.

Italian Harbour Affairs

ACCORDING to statistics which have just been published by the Consorzio Autonomo del Porto di Genova during the first eleven months of 1933, shipping in the Port of Genoa included the arrival and clearance of 9,365 ships, representing 19,091,579 n.r.t., against 8,898 ships and 17,724,221 n.r.t. arrived and cleared during 1932, this being an increase of 467 ships and 1,367,358 n.r.t. In connection with the goods traffic, it may be interesting to consider the following figures:—

JANUARY—NOVEMBER.

	1932 Tons	1933 Tons	Difference Tons	Percentage
Goods Unloaded.				
Coal	2,007,170	2,067,805	+ 60,635	+ 3.02
Cereals	665,121	375,809	—289,312	— 43.49
Oil Seeds	157,158	156,392	— 766	— 0.49
Oil	295,261	410,708	+115,447	+ 39.09
Phosphates	65,315	137,003	+ 71,688	+116.38
Metals	170,875	301,398	+130,523	+ 76.38
Wool	52,344	56,809	+ 4,465	+ 8.53
Cotton	144,520	170,157	+ 25,637	+ 37.73
Skins	16,522	28,929	+ 12,407	+ 75.09
Lumber	113,870	167,798	+ 53,928	+ 47.35
Other Goods	885,906	1,033,941	+148,035	+ 16.71
Total Imports ...	4,574,062	4,906,749	+332,687	+ 7.27
Goods Loaded.				
General cargo ...	823,211	944,634	+121,423	+ 14.74
Ships' supplies ...	16,962	20,454	+ 3,492	+ 20.58
Bunker Coal	202,010	192,161	— 9,849	— 4.88
Oil Fuel	152,576	192,559	+ 39,983	+ 26.20
Total Exports ...	1,194,759	1,349,808	+155,049	+ 12.97
Grand total ...	5,768,821	6,256,557	+487,736	+ 8.45

There has been a considerable improvement, both in imports and exports, regarding shipping at Genoa. The largest increase in imports is shown under general cargo, followed by metals, oil, phosphates, etc. The imports of coal, which have been considered one of the main features of Genoese shipping, have shown an increase of only 3.02 per cent. The decrease in bunker coal has been offset by a considerable increase in oil fuel.

The figures which have been published in the yearly report submitted by the President of the Consorzio Autonomo del Porto di Genova to the general meeting of the Corporation includes the following figures regarding trade by land to and from the hinterland of the Port of Genoa:—

JANUARY—NOVEMBER.

Imports and Exports.

	1932 Tons	1933 Tons
By Rail	3,926,323	3,769,603
By Motor Truck ...	508,535	712,980

There has been a decrease in trade by rail, and an increase in trade by motor truck, showing the growing competition between these two means of communication.

The situation of shipping in the Port of Genoa has continued to improve during the month of January, 1934, for which preliminary figures have been published. Goods imported totalled 482,425 tons, and goods exported 78,136 tons, against 420,256 tons imported and 68,313 tons during the corresponding period of 1933.

Recently, there has been considerable competition between Genoa, Naples, Savona and Venice in regard to the quick unloading of coal. The s.s. " Bainsizza " unloaded 11,000 tons of coal at Genoa in 30 hours, while Savona ships have unloaded 7,200 tons of coal with electric cranes in 16 hours, etc.

Another feature to be considered, in regard to shipping in Genoa, is the activity of the Genoese Dry Docking Corporation during 1933, which may be summarised as follows:—

	1933 No.	1933 Gross Tons	1932 No.	1932 Gross Tons
Steamers and motorships ...	380	2,388,868	479	2,710,230
Motor sailing vessels	9	6,269	13	4,053
Sailing vessels	19	6,926	20	5,610
Various ships	45	11,873	30	5,319
	453	2,413,936	542	2,725,212

The Italian Government has decided to build a dry dock in Naples, the project for which has just been approved, and the construction of a new graving dock in Naples has just been commenced. This dry dock is to measure 321 metres in length, but it will be possible to extend it to 400 metres. The width at entrance is to be 40 metres, and the depth of water 14 metres. There is no doubt that Naples is situated in a much more favourable position than Genoa to attract vessels from the Mediterranean that require dry-docking. The figures for 1933 show that the total tonnage arrived and cleared at Naples has exceeded 21,000,000 net register tons.

The harbour improvements at Naples are well forward, the second section of the Beverello Mole is already completed, and dredging alongside has been started, so that even before the summer this section will be opened to trade. The necessity of demolishing the warehouses has delayed the completion of the Eastern section towards the Sacramento Mole, measuring 400 metres in length, but this will be ready early in 1935. The Government has supplied the necessary funds to provide the piers built in the new Littorio Dock at Naples with new electric cranes and electric elevators, while the Banco di Napoli is to supply the necessary funds for undertaking the construction of warehouses and sheds, including cold stores. The warehouses are to be rented to private firms.

Port of Montreal Activities

The number of inland vessels which entered the harbour of Montreal during 1933 season of navigation totalled 4,413, representing 3,868,274 net registered tons, an increase of 319 vessels and 112,832 tons over the 1932 season.

The heavy movement of package freight from the Great Lakes to Montreal, much of which was for transhipment to ocean steamers and vessels employed in the coasting trade, was responsible for the larger number of inland craft arriving at Montreal during the season under review. The 1933 figures are better than any year since 1929, when a total of 5,585 ships, representing 13,165,029 net registered tons, reported inwards. The record was established in 1926, however, with the arrival of 6,197 steamers and motor vessels, though these represented only 12,445,594 net registered tons. Some indication of the increase in freight handled by these craft may be seen in the canal carryings for the season, which amounted to 6,945,396 tons from the opening of navigation to the end of November, compared with 6,642,584 tons in the corresponding period of the previous year.

With the arrival at the Port of Montreal during the past season of 1,061 trans-Atlantic steamers and motor vessels, together with 415 engaged in the coasting trade, the grand total is brought to 5,889, representing a net register of 8,414,130 tons, compared with 5,368, representing 8,005,868 net registered tons, during 1932.

Oil Imports.

During the past navigation season oil tankers, mostly from Gulf ports and South America, discharged at Montreal a total of 1,819,343 tons of crude oil, gasoline and other petroleum products, compared with 1,571,869 tons during the preceding season. A considerable volume of refined oil and gasoline was carried from Montreal to points on the upper St. Lawrence and Ottawa rivers.

Canada's Wheat Exports for 1933.

Canada exported 191,968,681 bushels of wheat during the calendar year, 1933, which had a value of $122,412,686, or an average export price of 63.8 cents a bushel, according to figures issued recently by the Dominion Bureau of Statistics. In 1932 the export volume was 228,219,755 bushels, valued at $128,385,733 for 56.3 cents a bushel.

Exports of wheat flour for the year 1933 amounted to 5,570,424 barrels, valued at $19,016,758, or $3.51 a barrel. In 1932 the volume was 5,131,781 barrels, valued at $17,182,755, or $3.34 a barrel.

Heavy Gold Shipments through Bombay Harbour.

What was perhaps the largest single shipment of gold from Bombay for foreign countries in the last two years was made on February 3rd, 1934, when the B.I.S.N. Co.'s steamer " Takliwa," which sailed from Bombay for Durban, via Aden, carried gold worth Rs. 35,798,267, including sovereigns valued at Rs. 728,271. Of the total amount of bar gold carried by the " Takliwa," metal worth Rs. 4,024,392 for London, option New York, Paris or Amsterdam; gold worth Rs. 701,654 for London, option Paris or New York; gold worth Rs. 523,585 for Amsterdam, option London or Paris; gold worth Rs. 580,190 for London, option Amsterdam and the rest for London. The total value of gold exported through the Port of Bombay since Great Britain went off the Gold Standard up to date amounts to Rs. 1,622,649,160.

Notes from the North

Objection to Escalator.

OBJECTIONS to the use of mechanical plant for the discharging of cargo from ships have been responsible in the past for many disputes and arguments with the dock labourers' unions, and they have been partly overcome in past employers agreeing to enlarge a specified number of men in gangs handling particular classes of goods. There has been a renewal of the trouble at Liverpool, resulting in a strike of 250 men, who objected to the introduction of escalators for discharging 9,000 tons of Australian sugar from the steamer "Luceric." Over 3,000 tons had been discharged, and then dissatisfaction, which had been stirring for some time owing to the introduction of escalators, reached a climax. The employers, the Riverside Stevedoring Co., of Liverpool, placed the matter in the hands of the Employers' Association of the Port of Liverpool at the Mersey Dock Board Buildings, and negotiations were opened with the Transport and General Workers' Union, to which the men belonged. Since the introduction of the escalators, with which various experiments have been carried out in many docks for some months, the Riverside Stevedoring Co. has been actually employing more dock labourers. The Company offered to discontinue the use of escalators whilst negotiations were in progress.

Better Ship Canal Returns.

Manchester Ship Canal Company dividends have been restored to the 1931 level. The undertaking has enjoyed better trade during the past year, and this enabled the directors to recommend not only the payment of the 1931 scale of dividends, but also to increase the allocation to the reserve for contingencies and repairs to £35,000—the largest for several years. The carry-forward, moreover, is increased by nearly £500. Assuming that the dividends absorb the same sums as they did two years ago, the net revenue for the year just ended appears to have been £190,097, against £123,261 for 1932, and £188,269 for 1931. For 1930, when the net revenue was £279,790, the dividends were at double the rates paid for 1931, but the allocation to reserve was only £7,000.

Dee River Works.

Mr. A. Caradoc Williams, Acting-Conservator for the Dee Conservancy Board, in his annual report, states:—

The average condition of the navigation during 1933 with regard to depth, has been equal to the average condition of 1932. The raising and repair of the northern training wall, with the exception of a length of about 80 yards at the end of the wall, has been finished. During the year the high training bank has been maintained, but has not been extended. The return supplied by the Board's collector of the number and tonnage of vessels arriving at the several stages on the river in 1933, as compared with 1932, shows a decrease in number of 102, and a decrease in tonnage of 9,757.

Soundings show that the available depth in the navigable channel between Chester and Connah's Quay is six inches less than in November. It had been decided to repair and raise the low part of the northern training wall near the end of the wall, but before anything could be done, a change took place, by which the channel round the end of the wall practically closed up, and vessels using the river had to cross over the low part of the wall near the end. It was deemed advisable to level down some projecting stone to make the passage less difficult. The work of keeping up the good condition of the northern training wall will be proceeded with as soon as possible, but the low part near the end will not be raised until it is seen how far the changes will go which are now in progress.

Oil Tank Cleaning.

Messrs. Grayson, Rollo and Clover Docks, Ltd., Birkenhead, hold the licence for operating an American invention, the Wheeler system of oil-tank cleaning. Hitherto, the common method of cleaning oil tanks has been by hand. For the purpose of using the Wheeler system, Messrs. Grayson, Rollo and Clover Docks, Ltd., bought the Wallasey hopper "Tulip," which they have equipped with tanks to meet the requirements of the new cleaning plant. Two powerful vacuum pumps suck the residue of oil from the tanks of the vessel to be cleaned and discharge it into the vacuum tanks in the cleaning craft ("Tulip"). The process, which is devoid of all complications, is speedy and efficient. Moreover, the sides of the tanks are completely washed, both in corners and angles. In the tanks of the cleaning craft there is a first-class separation of water from the oil. With the system the oil tanks of any vessel—oil carrier or passenger liner—can be quickly cleaned without causing any dirt, either in alleyways or on deck.

Gift of a Sandbank.

A sandbank—sixty acres in extent, and practically always covered by the sea—has been handed over by the Ministry of Health to the Fleetwood Corporation. The sandbank, two miles from Fleetwood, first appeared on an ordnance map in 1842, scheduled as forming part of the neighbouring district of Thornton. Now, nearly a hundred years later, the Ministry has decided that it is appropriate that the bank should be attached to Fleetwood. Fleetwood, though highly amused, is puzzled what to do with its additional 60 acres, which, at the last census, appeared on the schedule as "a detached portion of the district." Although informed that the sandbank was almost continuously covered by the sea, the Ministry has followed up by offering to add it to the Fleetwood district to form part of the Rossall electoral ward.

Wallasey Embankment Works.

Wallasey Embankment Commissioners spent £2,665 in repairing the Leasowe Embankment during the past year. The total expenditure of the Commissioners amounted to £13,838, and £4,363 was carried forward, the latter sum being almost similar to that brought forward from the last account. Moreton is the largest contributor towards the maintenance of the embankment, with the exception of the Mersey Docks and Harbour Board, and the total rate of assessment last year amounted to £6,560. Of this amount Moreton had to contribute £1,049, and the Dock Board, on their land in the different districts, £3,474.

Fanciful Dee Scheme.

Another suggestion has been put forward for converting part of the Dee estuary to useful purpose, this time by Commander A. A. Fownes, in an address at Heswall. His proposal is to create a naval seaplane base, by erecting a breakwater from Hoylake to the Point of Air. At low water, he explained, the Dee was just an endless expanse of sand. A great transformation could be accomplished by throwing a massive and broad breakwater across the mouth of the River Dee from Hoylake to the Point of Air, as a result of which the river would become merged in a great expanse of border lake. The breakwater could carry a broad arterial roadway, with a shelter dock extending along the seaward side, and this would attract, accommodate and accelerate a volume of road traffic into the very heart of North Wales. Provision would have to be made at certain points of the breakwater to accommodate the release of the fresh water as it came down from the upper reaches. There was no reason why the great railway interests should not consider the breakwater as an alternative route for their traffic to the North Wales coast and district, but they would have to take into consideration a swing bridge working at the Point of Air end in connection with a deep-sea entrance lock—incidentally, with a lighthouse complete—to accommodate the existing shipping interests of such tidal places as Mostyn, Flint, Bagillt, Connah's Quay, to say nothing of Chester itself. These Deeside shipping points would materially benefit by the schemes inasmuch as they would have continuously high water at their respective quays instead of the present tidal contraction.

Visibility in Mersey Tunnel.

Mersey Tunnel Joint Committee has placed with the Radiovisor Patent Co., Ltd., London, a contract for equipment which will automatically register the visibility in all parts of the tunnel in the control room, and thus enable steps to be taken to clear the air by means of increased ventilation. Fog, mists and fumes from the exhaust of motor vehicles are all likely to interfere with the visibility in the tunnel, and as they accumulate very quickly it will be necessary to dispel them immediately. The ventilation will be directed from the control room, where the visibility in all parts will be recorded. The apparatus operates by the agency of light shining on photo-electric cells. There will be six sets of apparatus, three on the Liverpool and three on the Birkenhead side. Air from the tunnel will be drawn by the apparatus, and if it contains any mist or fog this immediately interferes with the resistance.

Control of Tunnel Plant.

The control of the electrical and mechanical apparatus of the new Mersey Tunnel has been left in the hands of the Liverpool City Electrical Department at an estimated cost of £7,000 a year. On the recommendation of the architect, the Mersey Tunnel Joint Committee has agreed to an improvement of the architectural treatment of the George's Dock exhaust shaft. In consequence of the adoption of the contracting-out system of management, it was resolved to reduce the internal fittings of the George's Dock buildings, at a saving in capital expenditure of between £14,000 to £15,000.

Notes from the North—continued

Silt in the Mersey.

Laboratories and motor-boats have been equipped at Liverpool, and preliminary observations have begun in an important new investigation by the Water Pollution Research Board relating to the deposition of silt and other matter in the estuary of the River Mersey. The main object of the investigation, which is being carried out by the Department of Scientific and Industrial Research at the sole cost of the Merseyside local authorities and the Mersey Docks and Harbour Board and other bodies, is to ascertain the effects of discharge of crude sewage on the character of the deposits, a subject which is of considerable importance to the various local interests, and has for a long time given rise to much controversy. In the first instance, a River Mersey Committee of the Board was appointed to draw up a detailed programme of work and to supervise its execution. The programme includes hydrographical, chemical, and biological observations and experiments.

Dock Board Regulations.

It is an infringement of the Mersey Dock Board regulations to leave lorries unattended in the avenues of the Liverpool Docks. A haulage contractor, who was negligent in observing this provision, was fined 40s. at Liverpool Police Court recently. Mr. A. Hopley, district traffic manager of the Mersey Docks and Harbour Board, said the firm had not received permission to leave the lorry where it was found. Permission was often granted, but haulage firms were then instructed where they might leave their vehicles overnight.

Ribble Navigation.

Alderman Lucas, at the last meeting of the Preston Town Council, referred to the continued improvement in the trade of the Ribble Dock. Every item of imports showed an increase on the previous year, and the committee considered the position satisfactory. The time had arrived when they must improve the equipment, particularly in view of the new silo which was nearing completion, and it was proposed to obtain two new cranes.

Reclaiming Morecambe Bay.

In a report by the Lancashire County Council Land Drainage Sub-Committee it is stated that £12,000,000 would be the maximum cost of a scheme to reclaim Morecambe Bay from the sea, and that the scheme, if started, might be wrecked by adverse weather. To form an embankment from Aldingham to Bare would take ten million cubic yards of suitable material, which could not be placed in position for less than £1 per cubic yard, and the face of the embankment would require very heavy pitching. Sluice gates would have to be provided to evacuate the water from the Kent, Leven and other rivers, or strong tidal banks constructed to allow the tide to flow up the various river channels. Assuming that ideal weather conditions were met with during the ten years or so that it would take to construct the bank, it is probable that after an expenditure of some £12,000,000, plus the cost of pitching, 35,000 acres of land would have been protected from the encroachment of the sea. If engineering difficulties or bad weather conditions were encountered, the cost would be enormously increased, and it is possible the work might have to be abandoned. In view of the tremendous expenditure which would be involved, the committee decided not to pursue the matter any further.

Coast Erosion Trouble.

Owing to the seriousness of the coast erosion at Blundellsands, the Crosby Council is planning to push the River Alt further out to sea. Between the Alt and the Mersey there are sandbanks which are covered at high tide, and, despite constant precautions, the coast is being steadily worn away. The Crosby Council's aim is to drive the River Alt seawards and thus reclaim the sandhills, which have been almost washed away. Several years ago an attempt to blast a new channel for the Alt through the sandbanks failed. It is proposed to set up slag groynes on the coast to prevent further encroachments. This will not materially affect the outlet of the Alt, but will push the river further out. So far, the Crosby Council has found the most effective method of fighting the erosions to be tin slag from Bootle Smelting Works. The slag has been put down for about half a mile, and is continually being replaced. Between 30,000 and 40,000 tons have been used during a period of about three years.

Huge Heel Post.

The biggest green heart log ever imported into Liverpool, consigned from British Guiana to Messrs. David Roberts, Son and Co., Bootle, arrived at King's Dock, Liverpool, recently. It was 57-ft. long, girth of 26-ins. by 26-ins., and weighed ten tons. The log will be used as a heel-post for a dock gate.

Garston Docks Appointment.

Mr. R. D. Roberts is to take up duty, early in March, as superintendent of the L.M.S. Garston Docks, Liverpool, the most important undertaking of its kind in the ownership of the railway.

Liverpool Fishing Port Idea.

Another attempt is being made to bring within the orbit of discussion the subject of making Liverpool a fishing port. This is intended now to be a scheme for relieving unemployment. At the last meeting of the Employment (Special) Committee of the Liverpool City Council a resolution was passed, instructing the Town Clerk to communicate with the Mersey Docks and Harbour Board and the various railway companies operating at Liverpool, acquainting them of the appointment of this committee, whose work it will be to promote schemes which will give employment in Liverpool. As regards the Mersey Docks and Harbour Board, their co-operation is particularly invited with reference to any scheme which may have for its object the establishment of Liverpool as a fishing port.

Fleetwood Improvements.

No decision has yet been reached by the Fleetwood Corporation Ferry Sub-committee on the proposed £20,000 ferry improvement scheme. Consideration has been given to the landing facilities at both Fleetwood and Knott End side of the Wyre, and a proposal from the L.M.S. Railway Co. for the improvement of the pier adjoining the ferry landing stage at Fleetwood, has met with approval. The cost of this work will be approximately £150. At the Knott End side, the wooden jetty is to receive attention, and it is proposed to spend a sum of £150 on this site.

Isle of Man: Red Pier Works.

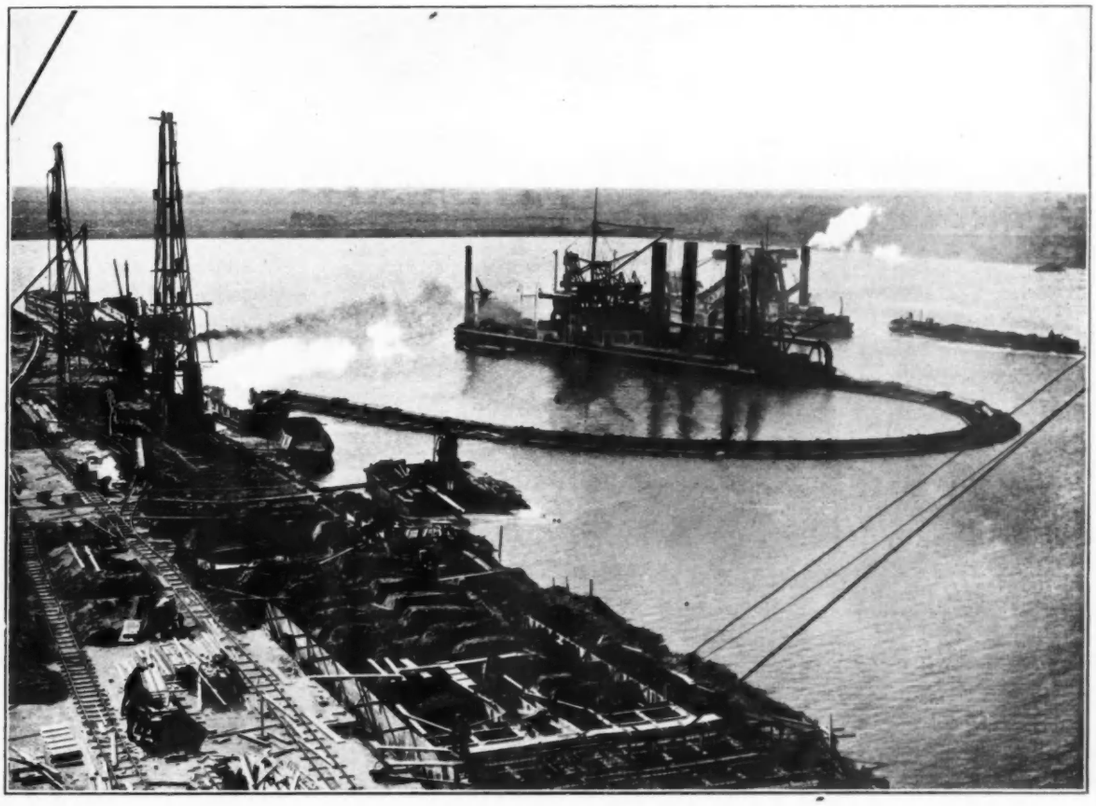
Excellent progress has been made with the extension of the Red Pier, Douglas, Isle of Man. All the concrete blocks of various shapes and sizes required for the job are constructed in the Battery Pier yard of the Isle of Man Harbour Board. Usually, three 15-ton blocks are turned out per day. Wooden moulds are constructed and filled with concrete, and a facing of Scarlet limestone placed on those blocks which will occupy outer positions. When they are set, they are hoisted away by a huge crane and gantry, which moves on wide rails the whole length of the yard, and stores them in readiness for transport to the Red Pier. The Board has at present six big cranes in use, the biggest, with its broad gantry and arm, being a prominent feature at the end of the Red Pier. It is estimated that it will be a further two years before the scheme is entirely completed.

It is expected that the western viaduct will be completed and ready for use during the coming summer. This viaduct connects the Victoria Pier with the Red Pier, and is 50-ft. wide, affording a footpath on either side and a wide roadway 380-ft. long. It is designed to offer a maximum resistance to inshore storms. The great cylindrical columns carrying the super-structure are raised 20-ft. above the shore level, and are founded in hard boulder clay, and in many cases extend over 14-ft. into the beach. The solid rock, in some cases, had to be drilled to provide a foundation. The viaduct is constructed throughout of reinforced concrete.

The cylindrical columns are actually built on the viaduct as the work proceeds. First, there is the concrete outer shell, about 6-ft. in diameter, which, when placed into position on the foundations, is filled with concrete and reinforced with heavy steel bars extending the whole length of the column. As the columns are raised, the main beams are built across, these being 48-ft. in length, 4-ft. deep, and 18-ins. wide. After these come the cross beams, and a section of the roadway is completed when the beams are concreted over. The walls on each side of the viaduct are also built of concrete, worked into a modern design, and they will be surmounted, at intervals, by wrought-iron electric light standards.

The whole of the extensive dredging and under-water rock removal in connection with the extension was completed last autumn, leaving the site of the pier extension free for construction. The new pier is to be provided with five sets of landing steps on each side, and a third step recess on each side is now under construction. The height of the extension walls from the sea bed is 50-ft., and the first 18-ft. of this height had to be built below low-water level by divers. For the most part, the work is built of solid concrete blocks, each weighing 15 tons, and since the commencement of the construction works in the late summer of 1931, 2,000 blocks have been placed in position, in addition to thousands of tons of mass concrete placed by divers in the foundations and the submerged wall across the harbour at the western limit of the dredging. About 33-ft. more than is visible above sea level has been completed of the extension under water. The space between the two outer walls of the extended pier is filled with rubble and added strength is given by the building of solid concrete cross-walls from side to side.

WESTMINSTER DREDGING COMPANY LTD.



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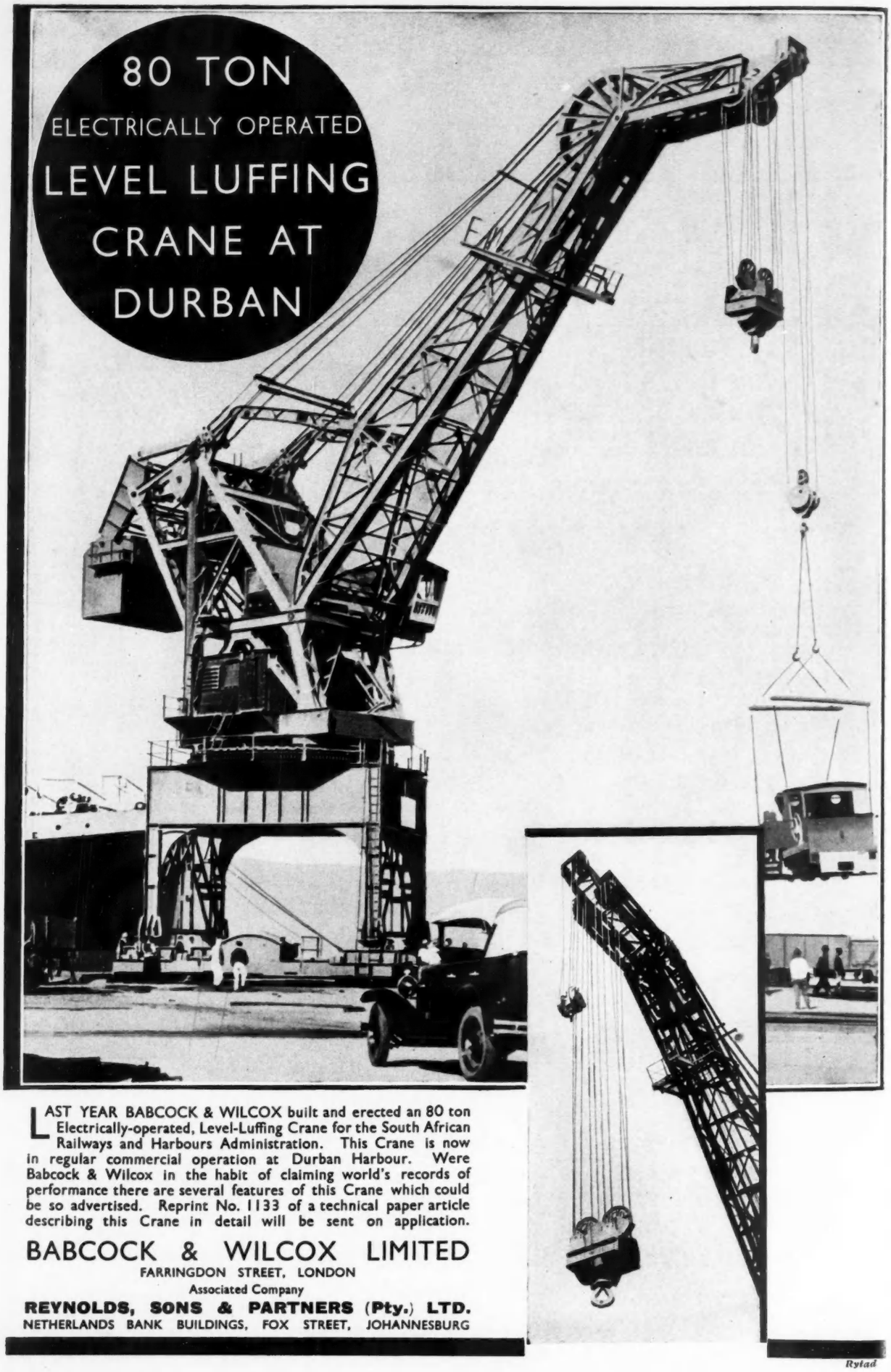
VAR GOD ARE ROPA "THE DOCK AND HARBOUR AUTHORITY" NAR ANNONSORERNA TILLSKRIFVAS



LAST YEAR BABCOCK & WILCOX built and erected an 80 ton Electrically-operated, Level-Luffing Crane for the South African Railways and Harbours Administration. This Crane is now in regular commercial operation at Durban Harbour. Were Babcock & Wilcox in the habit of claiming world's records of performance there are several features of this Crane which could be so advertised. Reprint No. 1133 of a technical paper article describing this Crane in detail will be sent on application.

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Acceptance Trials of Three 750-gallons per minute Dock Fire Pumps

By A. O. HELPS, A.M.I.Mech.E., M.I.Struct.E., Mechanical Assistant to the Port of Bristol Authority

THE writer recently inspected and tested three Turbine type Self-governing Fire Pumps, the capacity of each pump being 750 gallons per minute, against a head of 345-ft.

Considering that the actual test calculations, etc., might be of interest (particularly to the younger members of the profession) he decided to write the test results as an article.

It is interesting to first note the makers' original estimated delivery, head and power consumption figures at specified duty and, later, to compare them with the actual findings on test. An extract from makers' original Specification reads thus:—

> "The pumps to be capable of delivering 750 gallons per minute against a total head equal to 345-ft., including all losses when running at about 1,450 revs. per minute and requiring 106 b.h.p. at the pump shaft. The efficiency of the pump at this duty to be 74 per cent."

The makers based their calculations for the total head on the pumps in accordance with the following particulars:—

(a) Maximum Suction Lift	12-ft.
(b) Friction losses in 40-ft. of 8-in. diameter pipe passing 750 gallons per minute	1-ft.
(c) Friction losses in 1950-ft. of 8-in. diameter pipe passing 750 gallons per minute	48-ft.
(d) Delivery pressure at end of main 120 pounds per square inch	277-ft.
(e) Allowance for bends and valves	7-ft.
Estimated Total Head	345-ft.

Type of Pump Employed.

For pumps employed on Fire Duty a variation in lift is bound to occur, either from alteration in pipe friction owing to varying quantities of water being drawn off the distributing hoses, or because the pump has to deliver to different levels. It is a well-known characteristic of the Turbine Pump that *at constant speed* as the lift is reduced the power increases in much greater proportion to the reduction in lift, thus seriously overloading the prime mover. There are two ways of overcoming the difficulty, either by reducing the speed to suit the lift, or by designing the pump for self-regulation. The former requires that the prime mover is capable of developing enough power at the reduced speed, and necessitates constant supervision and hand operation. Moreover, plants driven by A.C. Motors are tied to a constant speed.

The pumps under investigation are of Messrs. Rees Roturbo manufacture, and self-regulation is effected by means of a revolving pressure drum, from which water issues in a rearward direction to that of the rotation, thus producing a Reactive Turbine effect similar to that in a Barker Mill. If, therefore, the lift is reduced and the pump is running at constant speed, proportionately more water is delivered from the pressure drum, and the turbine effect is increased and assists the prime mover to take the load.

Pumps for use on fire duties must be capable of employment over a fairly wide range of conditions. For any standard make of pump there will be characteristic curves available from the makers. Examination of these characteristics will show that pumps of this class can be used for a certain range of conditions as regard head and delivery on either side of those corresponding to maximum efficiency. Guaranteed characteristic curves should always be supplied with any pump.

Actual Results on Test.

SCOPE OF TEST.

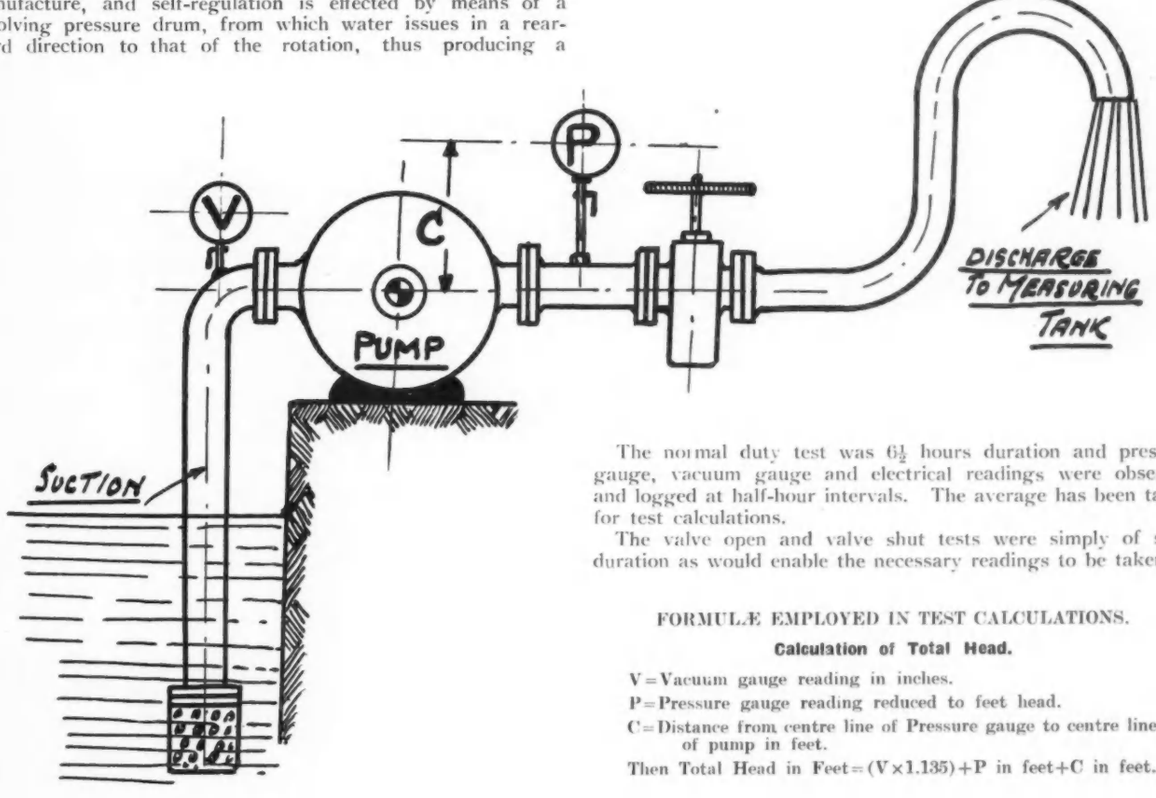
(1) To determine the B.H.P. required at the prime mover under various conditions from pump valve shut to pump valve full open.
(2) To measure the rate of discharge in gallons per minute at the specified duty head of 345-ft.
(3) To certify that the rated output at this head is reasonably within the capacity of the motor driving the pump.
(4) To take various readings to enable the pump Characteristic Curves to be prepared from which the output in gallons per minute, the head and volume, B.H.P. at Motor and Pump Efficiency can be instantly ascertained under any condition, from pump valve shut to pump valve full open.
(5) To test the pump casing to 300-lbs. per square inch by Hydraulic Pressure.
(6) To open up the pump after the main test run and examine the principal working parts.

After the preliminary examination and approval of the measuring tanks and devices and testing of the pressure gauges by master gauge, the following tests were run:—

(1) Normal Duty Test to check specified 750 gallons per minute at 345-ft. head.
(2) Valve full open test.
(3) Valve shut test.

Note the delivery from the pump was led into a large tank in which were fitted the usual baffle plates, etc., to steady the water and facilitate the actual float or gauge reading.

The flow was calculated from the height of water flowing from the tank over a rectangular weir or notch, the actual machined width of which was 36-in.



The normal duty test was 6½ hours duration and pressure gauge, vacuum gauge and electrical readings were observed and logged at half-hour intervals. The average has been taken for test calculations.

The valve open and valve shut tests were simply of such duration as would enable the necessary readings to be taken.

FORMULÆ EMPLOYED IN TEST CALCULATIONS.

Calculation of Total Head.

V = Vacuum gauge reading in inches.

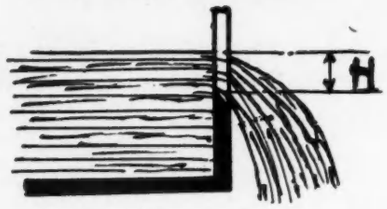
P = Pressure gauge reading reduced to feet head.

C = Distance from centre line of Pressure gauge to centre line of pump in feet.

Then Total Head in Feet = (V × 1.135) + P in feet + C in feet.

Acceptance Trials of Three Dock Fire Pumps—continued

Calculation of Delivery in gallons per hour.
Rectangular Notch Method.



L = Effective length of Notch in inches.
Equals Actual length minus .2H.
H = Height of water flowing over notch in inches.
Then delivery in gallons per hour = $160 \times H \times \sqrt{H} \times L$.

These two simple formulæ are all that are required to obtain delivery in gallons per minute and head at any duty.

By employing the formulæ on previous page, we will now proceed to obtain figures for construction of the Characteristic Curve which forms the criterion of the pump performance.

NORMAL DUTY TEST FIGURES.

H = Height of water flowing over 36-in. notch in measuring tank was 3.97 inches.
Actual width of notch 36-in.
Therefore Effective Length L = 36 minus .2H.
Therefore L = 35.21 inches.

Therefore Delivery in gallons per hour at normal duty
$= 160 \times H \times \sqrt{H} \times L.$
$= 160 \times 3.97 \times 1.99 \times 35.21.$
= 44,500 gallons per hour.
= 742 gallons per minute.

Total Head in Feet.

V = Vacuum gauge reading was 4.3-in.
P = Pressure gauge reading was 148-lbs. per square inch.
Equals 342-ft. head equivalent.
C = Measured 1.166-ft.
Therefore Total Head in feet at Normal Duty
$= (V \times 1.135) + P$ in feet + C in feet.
$= (4.3 \times 1.135) + 342 + 1.166.$
Total Head = 348-ft.

Normal Duty Electrical Readings.

456-volts, 194-amps. Therefore Electrical H.P. = 119.
Test Motor Efficiency at 194-amps = 88 per cent.
Therefore B.H.P. at Test Motor = $119 \times .88 = 105$ B.H.P.
Delivery 742 gallons per minute at 348-ft. head.

Therefore H.P. at Pump = $\frac{742 \times 10 \times 348}{33{,}000} = 78.2$ WHP.

Pump Efficiency = $\frac{\text{WHP}}{\text{BHP}} = \frac{78.2}{105} = 74.5$ per cent.

Therefore Efficiency at Normal Rated Duty of 742 gallons per minute against 348-ft. head = 74.5 per cent.

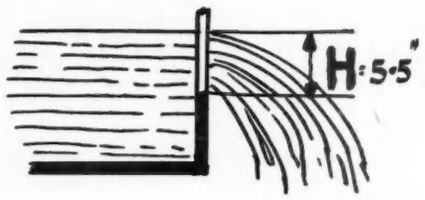
VALVE FULL OPEN TEST FIGURES.

Total Head.

Vacuum gauge reading V = 6-in.
Pressure gauge reading P = 39-lbs. per sq. in. = 90-ft. head.
C as before = 1.166-ft.
Then Total Head = $(V \times 1.135) + P$ in feet + C in feet equals $(6 \times 1.135) + 90 + 1.166$-ft.
Total Head Valve Full Open = 98-ft.

Delivery in Gallons per hour Valve Full Open.

H = Height of water flowing over notch was 5.5-in.
Actual Width as before 36-in.
Effective Length L = 36 minus .2H.
Therefore L = 34.9-in.



Delivery in gallons per hour = $160 \times H \times \sqrt{H} \times L$
$= 160 \times 5.5 \times 2.341 \times 34.9$
= 72,000 gallons per hour
= 1,200 gallons per minute.

Electrical Readings Valve Full Open.

454-volts, 185-amps.

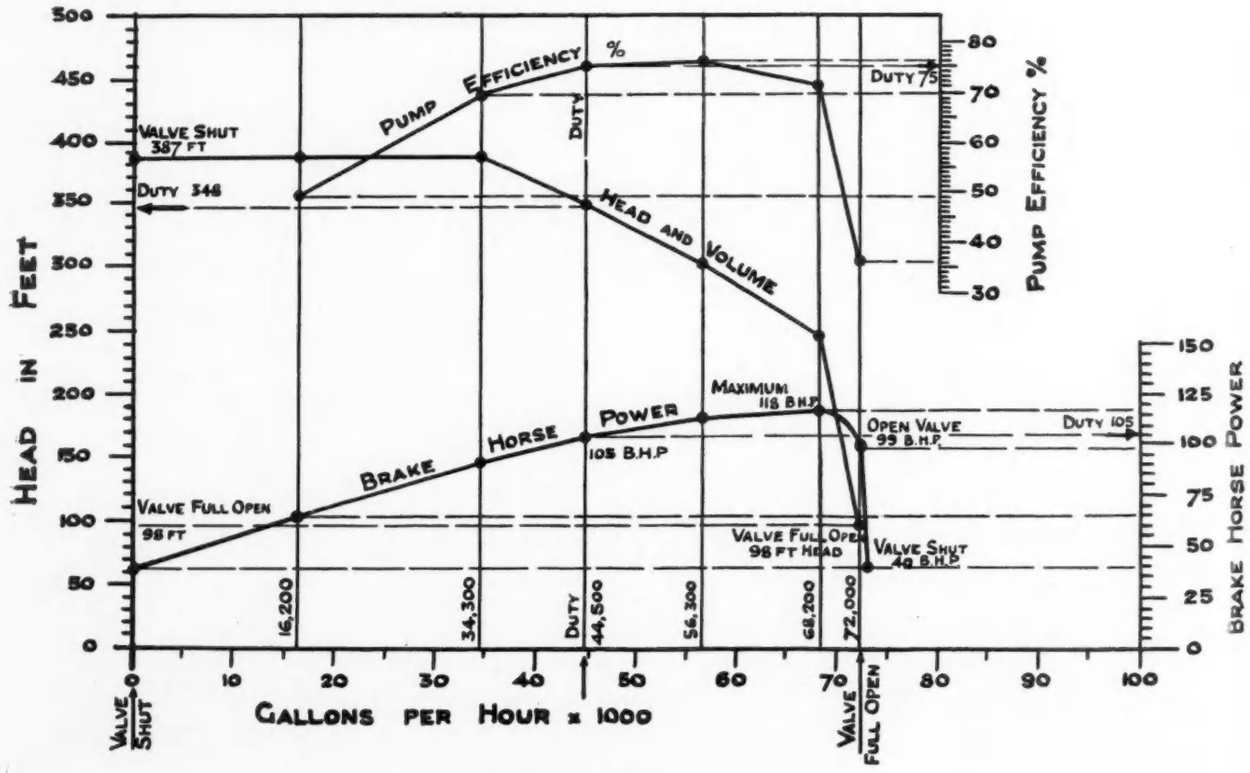
Therefore EHP = $\frac{454 \times 185}{746} = 112.5$ EHP.

Efficiency of Test Motor at 185-amps = 87.8 per cent.

Therefore BHP at Test Motor = $112.5 \times .878 = 98.9$.

Water H.P. at Pump = $\frac{1200 \times 10 \times 98}{33{,}000} = 35.6$ WHP.

Therefore Pump Efficiency Valve Full Open
$= \frac{\text{WHP}}{\text{BHP}} = \frac{35.6}{98.9} = 36$ per cent.



Characteristic Curves of Pump.

Acceptance Trials of Three Dock Fire Pumps—continued

VALVE CLOSED TEST.

There is no delivery under this condition, therefore the Pump Efficiency cannot be obtained, but the B.H.P. input and maximum line or pump casing pressure can be found.

Electrical Readings Valve Closed.

462-volts, 84-amps.

$$EHP = \frac{462 \times 84}{746} = 52 \text{ EHP.}$$

Efficiency of Test Motor at 84-amps. = 75.3 per cent.

Therefore B.H.P. Input to Pump = 39.2 B.H.P.

Pressure on Discharge Gauge P = 167-lbs. per sq. in.

Therefore Maximum Pressure on Pump or Line under any condition = 167-lbs. per square inch.

Table No. 1 gives the specified results and actually obtained results for Normal Duty.

Table No. 2 is a summary of all test results.

The Characteristic Curve compiled from Tests 1, 2 and 3 is also given; this shows the Head and Volume, Delivery, B.H.P. at Prime Mover and Pump Efficiency under any condition.

It will at once be seen that the pump is up to specification and the duty is well within the power of the prime mover, namely 118 b.h.p. at 1,450 revs. per minute.

The pump casing was tested by hydraulic pressure to 300-lbs. per sq. in., which it satisfactorily withstood.

The workmanship on examination was good and the pumps were accepted as being up to specification.

TABLE 1.

NORMAL DUTY PARTICULARS.

TEST No. 1.

Observation	Actual	Specified
Delivery	44,500 gallons per hour	45,000 gallons per hour
Total Head in Feet ...	348	345
Pump Efficiency	74·5%	74%
B.H.P. at Prime Mover ...	105	106
R.P.M. of ditto	1,465	1,450

B.H.P. of motor fitted = 118 B.H.P. at 1450 r.p.m.

TABLE 2.

SUMMARY OF TESTS 1, 2 & 3. TESTING CURRENT 440 VOLTS D.C.

Test No. and Duty	Volts.	Amps.	R.P.M. of Pump	E.H.P.	Efficiency of Test Motor	B.H.P. at Motor	Total Head (feet)	Discharge at Pump Galls. per hour	Water H.P. at Pump	Pump Efficiency	Pressure on Line
Test No. 1 Specified Normal Duty ...	456	194	1,466	119	88%	105	348	44,500	78·2	74·5%	148 lbs. per square inch
Test No. 2 Valve Full Open ...	454	185	1,466	112·5	87·8%	98·9	98	72,000	35·6	36%	39 lbs. per square inch
Test No. 3 Valve Closed	462	84	1,463	52	75·3%	39·2	384	Nil	Nil	Nil	167 lbs. per square inch

The maximum B.H.P. output at prime mover under any condition was 118 B.H.P. with delivery of 68,000 gallons per minute. (See characteristic curve).

The B.H.P. of motor fitted to drive pump at site was 118 B.H.P.

Therefore the motor is well within actual B.H.P. required for normal duty, that is, prime mover cannot be overloaded.

Normal pressure on line = 148-lbs. per square inch.

Maximum possible pressure with valve closed = 167-lbs. per square inch.

Bremen's Seagoing Shipping Traffic in 1933

Seagoing shipping traffic for Bremen account rose in December considerably; with 597 vessels and 707,631 net registered tons arrivals, it exceeded that of November by 44 vessels, or 8 per cent., and by 94,024 net registered tons or 15 per cent. Compared with December, 1932, however, the number of vessels decreased by 33, or 5 per cent., as coastal traffic was hindered by ice. The tonnage in the month under review, however, amounted to 70,808 net registered tons, or 11 per cent. more. The reason for the increase is, in the first place, due to more vessels calling at Weser ports, due to the ice blockage on the Rhine. A number of transports, which usually went on the waterways to the western ports, were on that account forwarded by rail to Bremen, and the other Lower Weser ports. In addition to this there was, furthermore, an increase of normal exports.

In the year 1933 altogether 7,224 vessels with 7,640,462 net registered tons arrived, against 6,507 vessels with 7,740,346 net registered tons in the previous year. The number of vessels, through increased trips of coastal sailing vessels, has increased by 717, or 11 per cent., while the decrease of tonnage only amounted to 1.3 per cent., against 6 per cent. in the first half year. Thus the activity of the autumn months, and particularly in December, has also had an effect on the larger vessels.

In seaborne goods traffic of the five most important Weser ports, December was not only a record month in 1933, but also showed the largest monthly tonnage since March, 1930. Imports and exports together amounted to 585,200 tons, and thus exceeded November, 1933, by 78,400 tons, or 15 per cent., and December, 1932, by 94,700 tons, or almost 20 per cent. The increase is chiefly due to a considerable increase in the export figures for the reasons already mentioned. With 310,900 tons, 74,400 tons, or 31 per cent., more were exported than in November. Imports were smaller than exports, but with 274,300 tons amounted to 4,000 tons, or 1½ per cent., more than in the previous month. Particularly cotton, timber and oilseeds, showed decreases; however, there were larger imports of piece-goods, phosphate, grain and coals, as well as arrivals of blubber. Compared with December, 1932, imports decreased by 7,000, or 3 per cent., while exports increased by 101,700 tons, or almost 50 per cent.

In the year 1933, 5,187,900 tons of seaborne goods were imported and exported. This represents an increase, compared with the previous year, by 293,600 tons, or 6 per cent. Up to the end of September it was only 2 per cent. The last quarter alone brought 15 per cent. increase. Imports have decreased further. They were with 2,899,200 tons, 62,200 tons, or 2 per cent. less. Grain, import coals, rice, bananas and oilseeds have dropped, while piece-goods, timber, phosphate and mineral oil, as well as ore, blubber and pyrites, arrived in greater quantities. Cotton and wool together remained at about the same level as the previous year. Exports, on the other hand, have exceeded the previous year's figures considerably. At 2,288,700 tons, they showed an increase of 355,800 tons, or 18 per cent. The increases consisted of coals and coke, potash salts and piece-goods, while the transport of grain and iron fell off.

Dusseldorf Harbour Traffic in 1933.

For the first time within the last three years traffic in the Dusseldorf harbours in 1933 showed an improvement. Goods traffic increased by 4.2 per cent. Total volume of traffic increased from 1,537,997 tons in 1932 to 1,602,975 tons in 1933. Consignments from German inland harbours increased by 80,000 tons. The total traffic by water with the German inland harbours increased by 100,000 tons. With the seaports it decreased by 35,000 tons. Consignments of wood, cement, gravel and sand indicate an improvement in the building market, whilst greater imports of petrol reflect an increase in motor traffic. Paper and glassware and cereals also show an increase, whilst the import of fodder declined. The harbour railway traffic serving the Dusseldorf harbours and wharves has increased by 2 per cent. Prospects for the year 1934 are favourable. Extensions costing about 1½ mil. Rm. are planned.

North-East Coast Notes

ALTHOUGH at the moment there is less pressure in trade on the North-east Coast than was experienced at the end of 1933, the volume of business in the main is well maintained. The January meetings of the local authorities had before them the official figures for the past year, almost all of which showed improvement, even if they did not quite come up to expectations. Furthermore, there is promise of greater activity in the shipyards, and unmistakable signs that the iron and steel industries are at length making real headway, while those in closest touch with the coal trade declare that the late depression has been conquered.

Meeting of the Tyne Improvement Commission.

At the first meeting of the Tyne Improvement Commission this year, Mr. R. S. Dalgliesh, chairman of the Docks and Trade Committee, said they had hoped to reach a total of 13,000,000 tons in their coal and coke shipments, but in this they had failed, the total being 12,943,049 tons, which was better than the previous year by 166,776 tons, an increase equal to 1.31 per cent. Mr. Dalgliesh added that the "bunkers only" trade had fallen off, notably to the Argentine and Australia. It might be that the Ottawa agreement between this country and Canada had had the effect of reducing the number of ships that left this country for the River Plate in ballast. The total quantity of bunkers shipped was 1,616,773 tons, a decrease of 186,280 tons on 1932. The vessels which called for bunkers only numbered 544, which took 608,418 tons. That was 108 fewer vessels and 218,706 tons less than in the previous year. Petroleum spirit imported in bulk increased by 12,166 tons, the total quantity being 54,721 tons.

New Service between Newcastle and Esthonia.

A new link between the Tyne and the Baltic ports was established in January when the steamer "Baltallinn" sailed for Riga from No. 9 Wharf at Newcastle Quay. The sailing of the "Baltallinn" marked the inauguration of a weekly service between Newcastle and Esthonia. The "Baltallinn" is a vessel of 1,300 tons, and is the property of the United Baltic Corporation of London, and will be engaged in the bacon and butter trade.

The Newcastle Chamber of Commerce and Portuguese Coal Shipments.

The Newcastle Chamber of Commerce have appealed to the Foreign Office on the question of the Portuguese Consular hours, so far as they affect the shipment of coal cargoes. The matter had already been put before the Portuguese Ambassador in London, following complaints from coal exporters and others, and the reply of the Ambassador was, that the Consul was working strictly legally. At a meeting of the Chamber it was explained that the position was that exporters and shippers had to get from the collieries the exact quantities of coal shipped, as approximate quantities were not accepted to allow of the vessels sailing. Sir Walter Raine explained that the overtime charges incurred were most excessive. They had had a report of a steamer delayed at Dunston-on-Tyne for 22 hours after it was loaded, simply because they had to have the exact quantity of coal loaded. He was not blaming the Ambassador or the Consul, for they were carrying out the law of their country. It appeared that in the Tyne district they had for many years had a concession, which other districts had not, of being able to telegraph the exact quantities after the vessels had sailed on declared approximate quantities. To vessels it was a serious matter to have to wait long periods or pay excessive overtime charges.

Tynemouth's Appeal.

With the object of developing their quayside trade, Tynemouth Town Council have circularised a large number of firms in the United Kingdom and abroad. The letter, in setting the borough claim to patronage, states that at North Shields there is a river portage of 3¾ miles on the Tyne. The principal industries are the fish trade, unrivalled between Aberdeen and Hull, the building, fitting, engining, and repairing of all classes of ships, and the manufacture of various food stuffs. The port is linked to Norway by a regular passenger and cargo service. The Corporation quay offers excellent accommodation for the discharge of small cargo vessels, a branch of trading that the Corporation is desirous of developing.

Blyth's Activity.

Mr. Ridley Warham, chairman, at the meeting of Blyth Harbour Commission, while congratulating members on the port's achievement during the past twelve months, said the shipments for the year exceeded those for 1932 by 17 per cent., and those of 1913 by 22 per cent. The previous best year in the history of the port was 1929, when 5,574,807 tons were shipped, but the figures for 1933 showed an increase of 197,729 tons over that record. Whilst the coastwise shipments still maintained a satisfactory average, it was pleasing to note that there had been an increase in the foreign trade, which was 7 per cent. better than 1932. In congratulating the members on these figures, he expressed the hope that 1934 would prove equally satisfactory. It is worthy of note, therefore, that only a few days after Mr. Warham spoke there was proof that the shipments were being maintained, for on January 23rd more than 27,000 tons were shipped, being the largest output in the history of the port for one day. At the meeting referred to, Mr. Warham paid a tribute to the work of the late Mr. T. E. Forster, who succeeded his father as a member of the Harbour Commission in 1901. Over the long period of 32 years, said Mr. Warham, Mr. Forster had taken the keenest interest in, and rendered invaluable service to, the Commission. No one had a wider knowledge of the port and its history, and his death left a gap which it would be impossible to fill.

Smart Work on the Wear.

Two excellent loading performances in the South Docks at Sunderland were achieved on January 27th. The Westoll steamer "Westburn" arrived in dock that morning, commenced to load at 8 a.m., and by 6 p.m. had completed loading 4,200 tons of cargo and bunkers. The other case was that of the s.s. "Borde," which took part cargo at the Wearmouth staiths, and then going into dock loaded 1,900 tons of coal between 1.15 p.m. and 5.15 p.m.

Meeting of the River Wear Commission.

Receipt of the loan of £35,000 from Sunderland Corporation with which to pay the half-year's annuities on the second Mortgage Funded Debt was reported at the January meeting of the River Wear Commission. The appointment of Captain R. W. Cooke, as assistant harbour and dock-master in succession to Mr. P. M. Hamilton, who had resigned, was also notified.

The return of trade at the Port of Sunderland in 1933 has just been issued by the River Wear Commission. This shows that the coal and coke shipments were down by 457,233 tons on 1932 at 4,075,549 tons. During the year, 2,544 vessels registering 2,008,991 tons, cleared from the port, paying tonnage rates amounting to £58,606, a decrease of 46 vessels, 164,026 tons, and £3,885 on dues. Apart from fuel shipments, the principal exports were:—Iron and Steel, 1,783 tons, against 1,518 tons; pitch and tar, 10,864 tons, against 11,335 tons; creosote oil, 3,335 tons, against 6,229 tons; petroleum and benzole, 14,041 tons, against 18,353 tons; binder twine, 2,006 tons, against 1,225 tons; paper, 1,608 tons, against 1,775 tons; and pit props, 6,287 tons, against 5,070 tons. The principal imports were:—Timber, 19,804 loads, against 17,520 loads; props, 84,573 loads, against 71,891 loads; iron and steel, 79 tons, against 2,974 tons; iron ore, 9,627 tons, against 6,602 tons; grain, 64,977 qrs., against 23,310 qrs.; esparto, 20,259 tons, against 19,370 tons; wood pulp, 9,413 tons, against 5,447 tons; petroleum in bulk, 79,373 tons, against 65,648 tons; cement, 17,102 tons, against 17,060 tons; sundries, 41,447 tons, against 60,602 tons.

Satisfactory Tees Reports.

At the meeting of the Tees Conservancy Commission in February, Col. A. J. Barry reported that satisfactory progress was being made in the Tees' reclamation work, while the Engineer's report stated that the boundary survey showed that the river was in a much better condition than it ever had been. At the same meeting Alderman T. Gibson Poole was re-elected North-East Coast representative on the national executive of the Dock and Harbour Authorities' Association. Mr. A. R. T. White was appointed chief collector of Tees' dues for Middlesbrough in succession to Mr. T. Close, retiring, after 45 years' service on the Commission.

Regulation of the Middle Weser.

The most important undertakings belonging to the public works' programme in the district of the Provincial Labour Exchange Niedersachsen, and partly nearing completion, are the low-water regulation of the Weser and the continuation of the Mittellandkanal. The Weser regulation requires 225,000 days' work, and the continuation of the Mittellandkanal 650,000 days' work. Almost 100,000,000 Rm. are to be expended on this work, and it is claimed thousands of unemployed given work. The Weser regulation from Hanover Munden to Bremen costs 770,000 Rm.

The present condition of the Weser shipping waterway has for a long time not come up to requirements. The faults are that on many stretches of the Weser the necessary depths do not exist, and that often sufficient width is lacking. This has the effect of making it, in many cases, impossible for vessels to pass each other. The further construction of the Mittellandkanal comprises the stretch from Thune-Wenden (near Brunswick) to Fallersleben Vorsfeld.

Tilbury Contracting & Dredging Co. Ltd.

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The Port of Copenhagen

Photo A. Aerial View of the Port of Copenhagen, looking Northward, with the Sound in the distance.

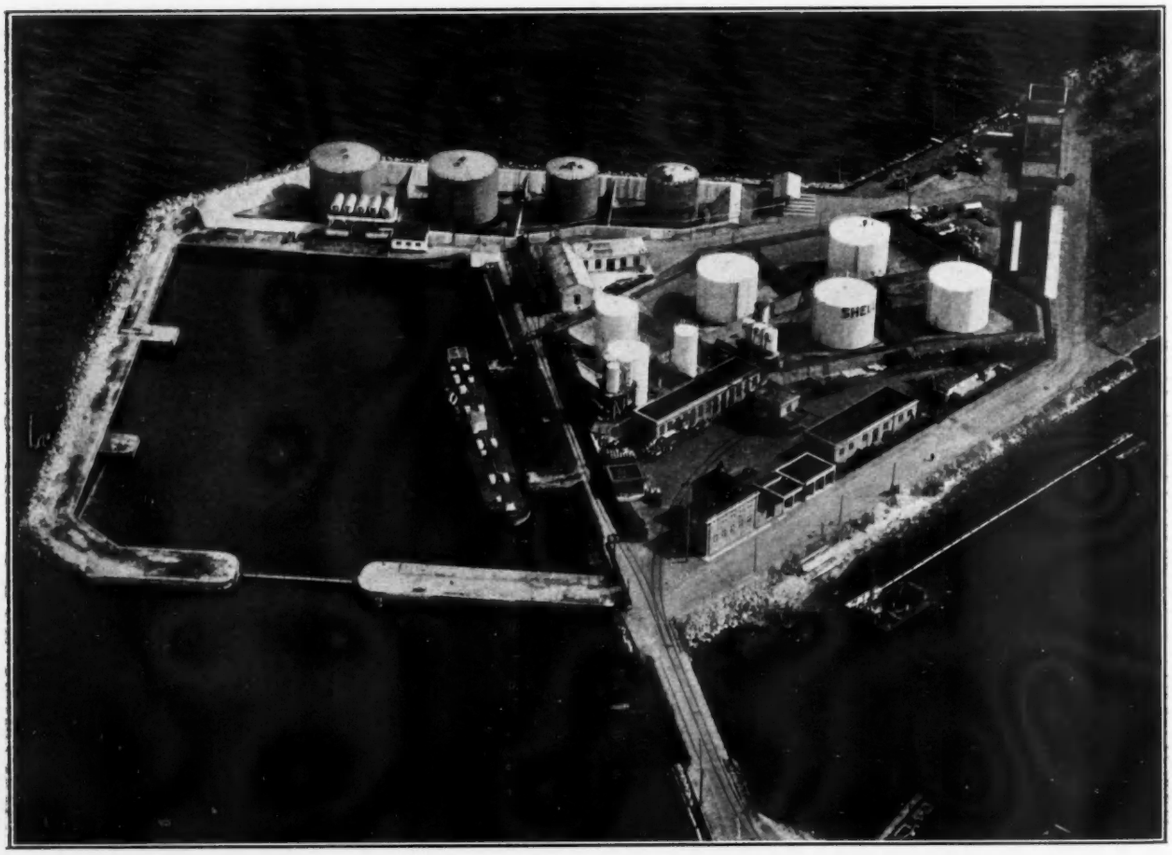


Photo D. Aerial View of Petrol Dock.

The Port of Copenhagen

I.—The Naval Dockyard and the Customs Port

Photo B. Reinforced Concrete Quay under construction, 1931, at 10-metre Basin—viewed from the rear.

THE Port of Copenhagen, situated on the Sound, one of the passages between the Kattegat and the Baltic, is the best and largest in Denmark, and also the leading port in these northern seas.

The geographical location of the harbour is lat. 55° 41′ N. and long. 12° 36′ E., or about as far North as Newcastle and as far East as Berlin. The population of the city and suburbs is about 80,000.

From the dawn of history, the channel between Seeland and the island of Amager has been used as a natural haven, and there has always been opportunity to build protective works and wharves in this sheltered water, with its natural fairways and freshening stream, good bottom and absence of tide.

The building of the harbour has proceeded during the last six centuries, though the main developments have taken place during the last fifty years.

The first impression made by the Port of Copenhagen upon the mind of a stranger is that of its wide extent. From the central Inner Harbour near the Citadel, it stretches about two miles northward to the Petrol Harbour, reclaimed from the Sound beyond the Freeport; while it stretches in the other direction about three miles to the dam and lock at the southern boundary; a total length of more than five miles. Yet the channel is not straggling and undeveloped, but lined with busy wharves throughout, and bordered by docks for a great part of its length. These fall into distinct groups: the Freeport and contiguous basins in the North, the Shipyard, Naval Base, and Inner Harbour in the centre, and the Southern Harbour and docks. The latter are behind a spectator viewing the city and harbour from the air, as in photograph A, looking to the Northward, with the Sound in the distance.

Growth.

Historically, the origin of the port is that also of the city, as implied by its name, in Danish *Kobenhavn*, or Harbour of the Merchants. It emerged from the obscurity of earlier primitive use when, towards the close of the 12th Century it was adopted by Absalon, bishop, statesman and warrior, as a base from which he could control and restrain the wild and piratical tribes frequenting these coasts at the entrance to the Baltic.

Denmark lies in a strategic position on the Baltic route to Russia, Finland, North-east Germany and Sweden. Among

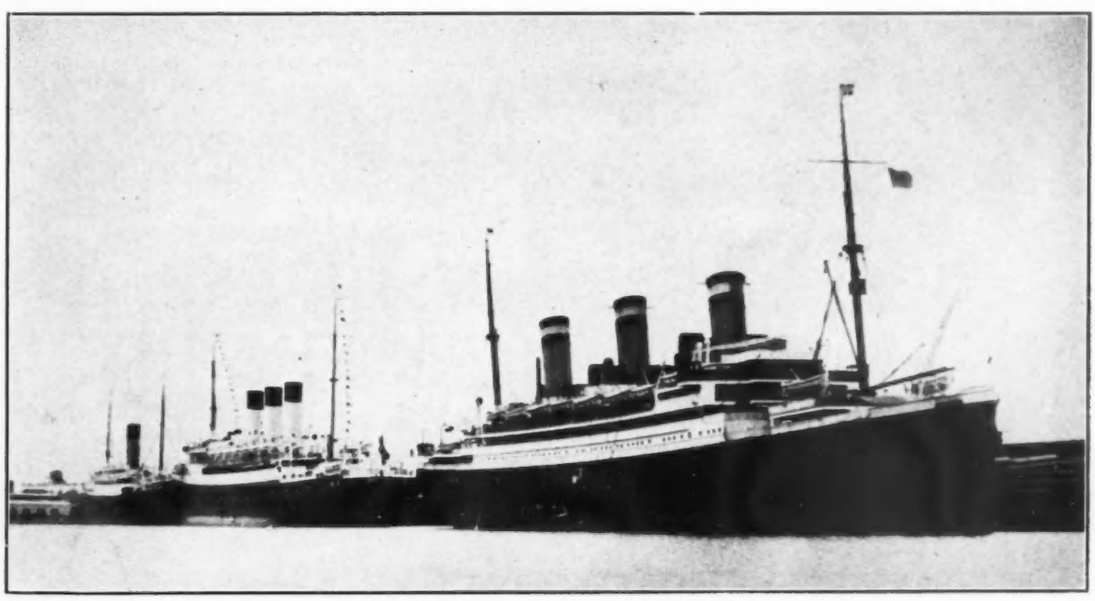


Photo C. Passenger liners in 10-metre Basin: Outer Harbour.

The Port of Copenhagen

Photo] *Photo F. Customs Quay.* [Jonals Co., Copenhagen

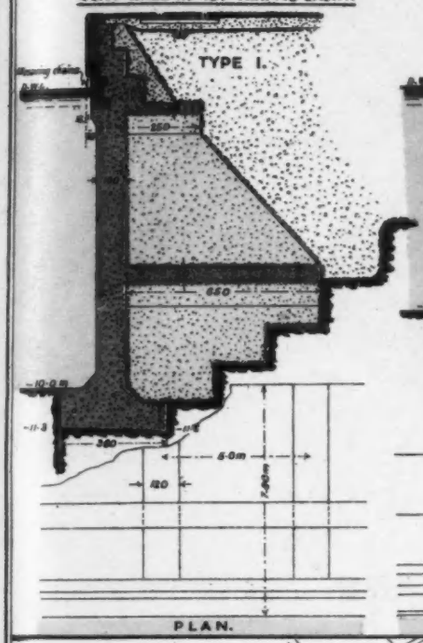
Photo G. Aerial view of the Quay of "Kvaesthusbroen."

PORT OF COPENHAGEN.

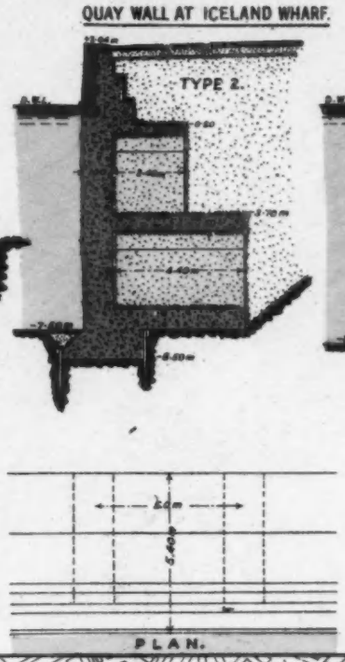
UNDER THE JURISDICTION OF THE HARBOUR BOARD, COPENHAGEN.

GENERAL PLAN.

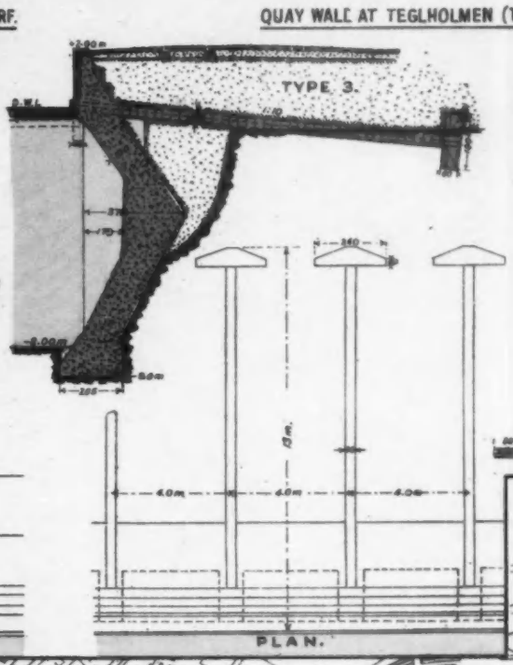
QUAY WALL IN 10th TRAFFIC BASIN.

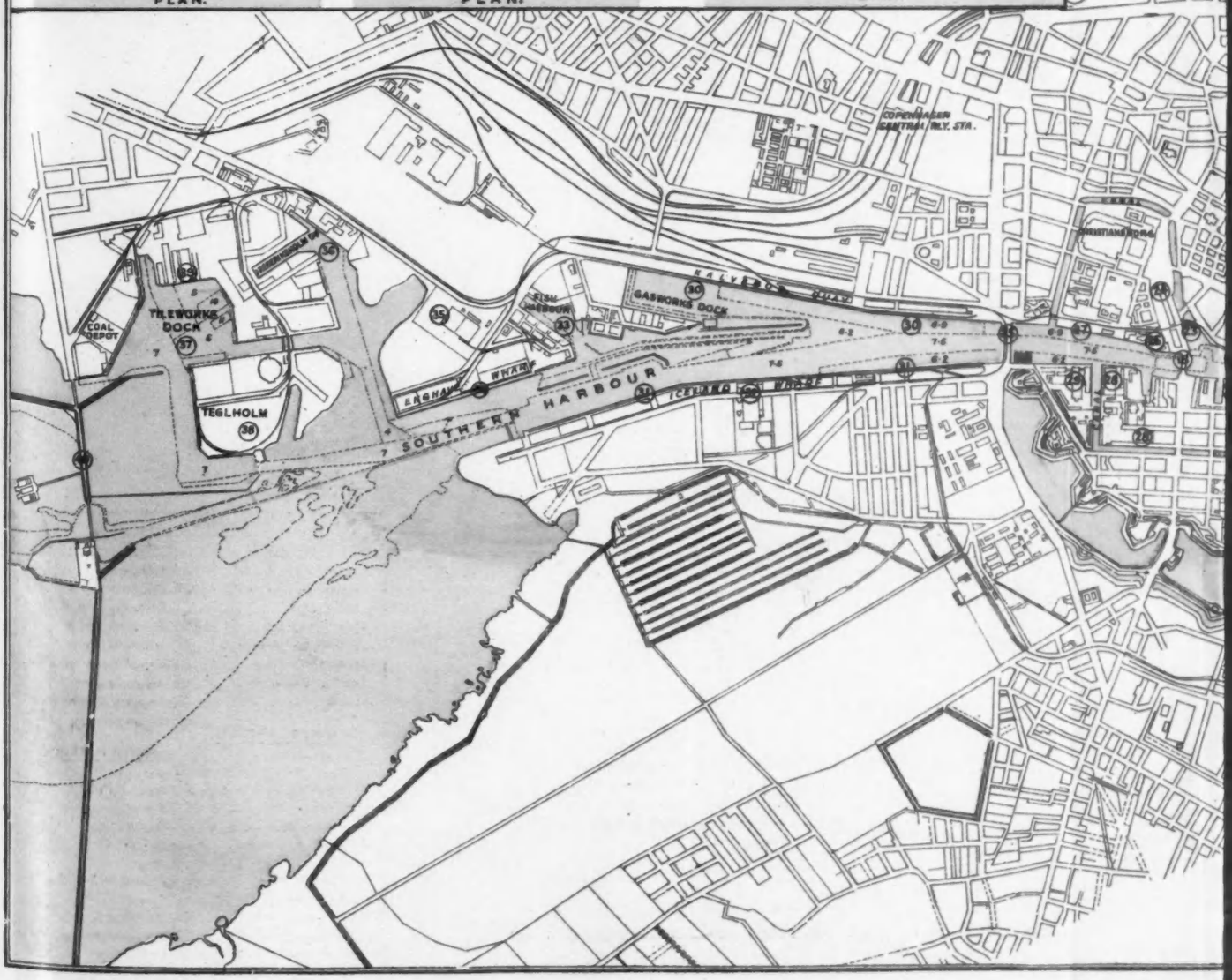


QUAY WALL AT ICELAND WHARF.



QUAY WALL AT TEGLHOLMEN (TILE ISLAND).





TO THE DOCK AND HARBOUR AUTHORITY, MARCH

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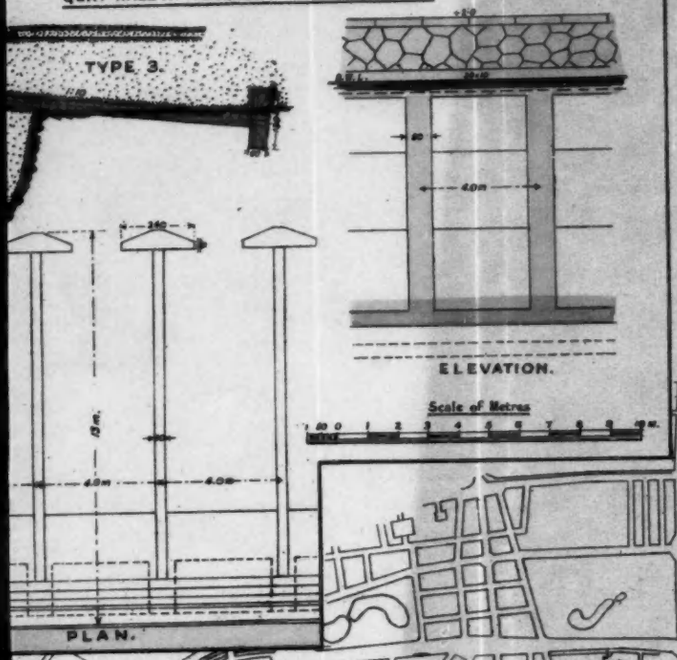
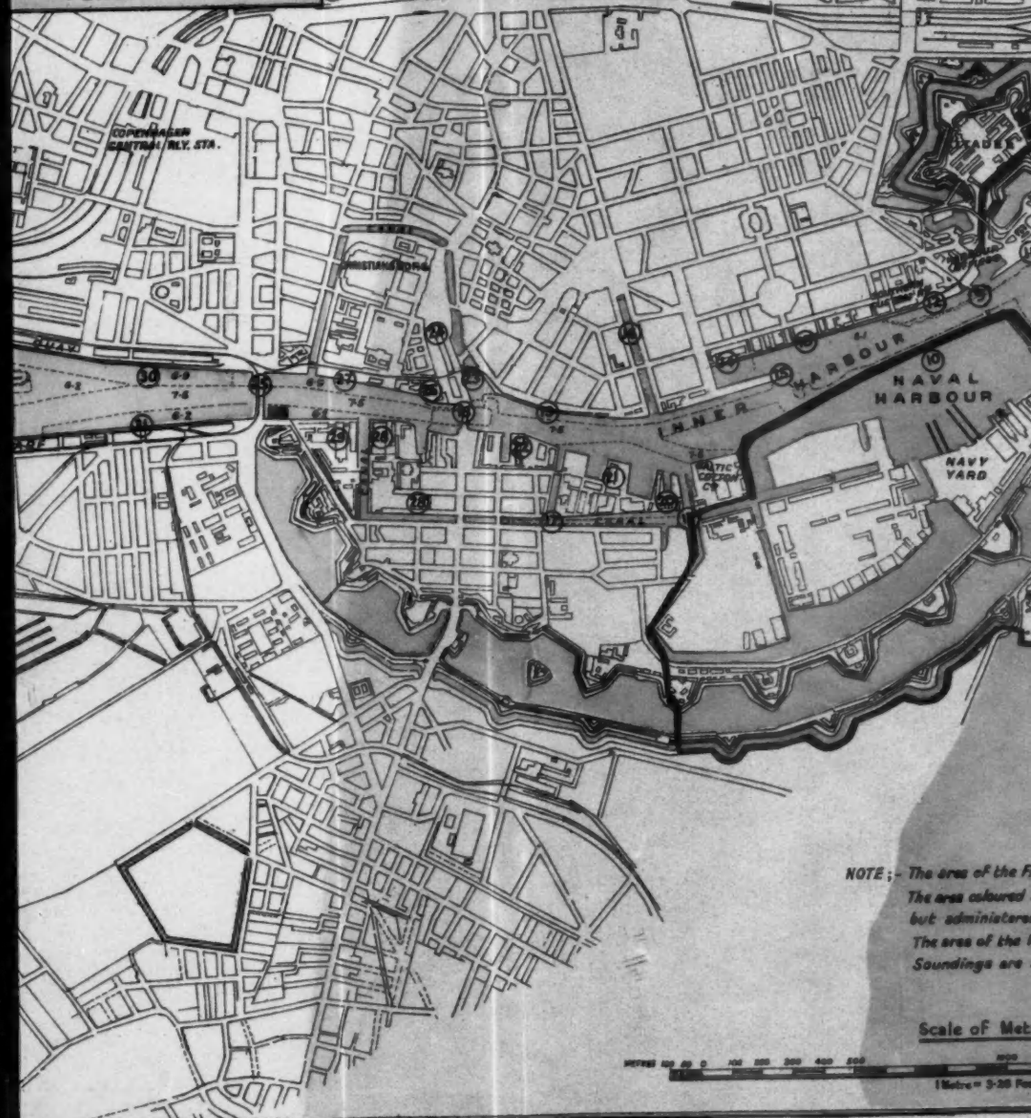
R BOARD, COPENHAGEN.

PLAN.

QUAY WALL AT TEGLHOLMEN (TILE ISLAND).





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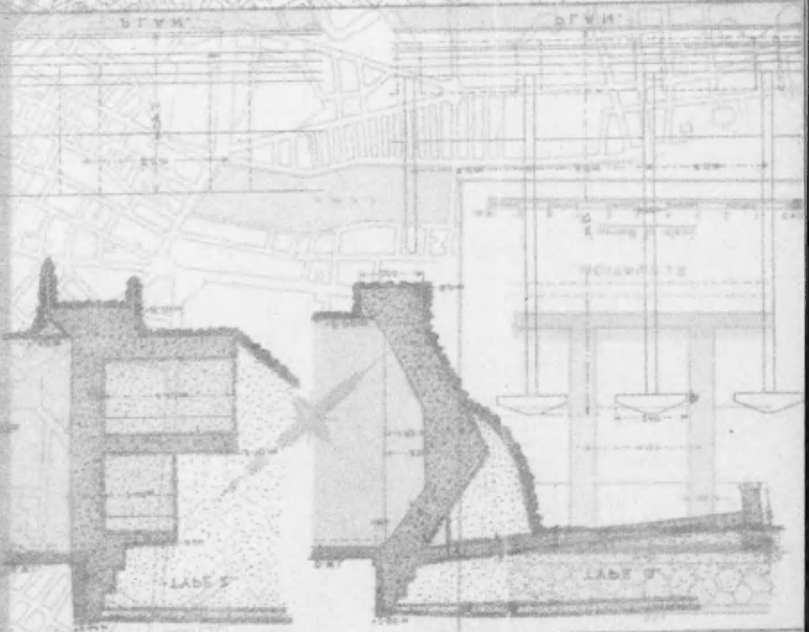
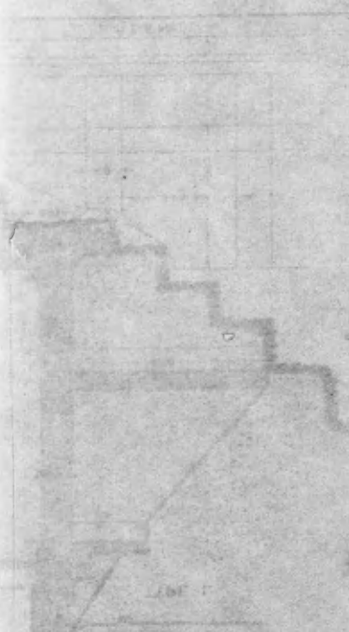
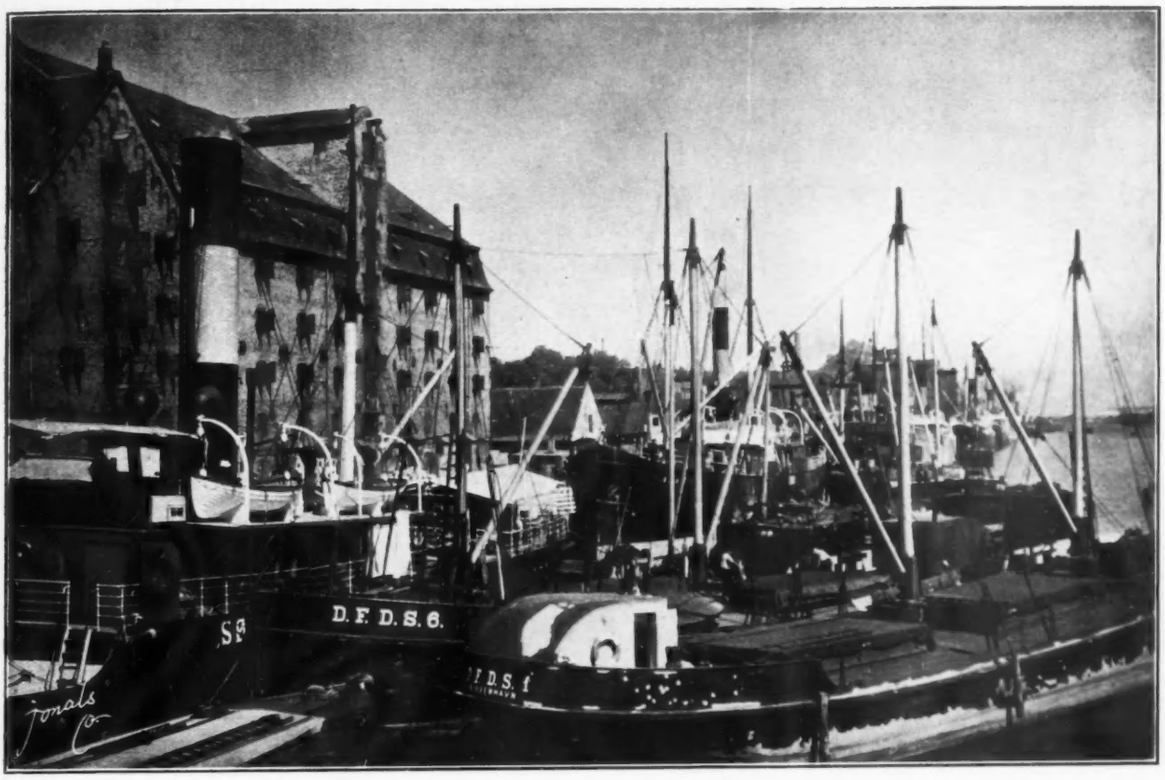




PORT OF COPENHAGEN

SUPPLEMENT TO THE DOCK

The Port of Copenhagen



Photo] *Photo H. Inner Harbour, Inland Service.* Jorals Co. Copenhagen

Photo] *Photo J. Inner Harbour, Kristianshavn.* [Jonals Co., Copenhagen

The Port of Copenhagen—continued

its three Eastern waterways: the Sound, the Great Belt and the Little Belt, the Sound has always carried the greatest volume of traffic, and on the Sound the key position is occupied by Copenhagen. The natural advantages of the site consist in the shelter afforded by the island of Amager and the nearness of deep water. The wisdom of Bishop Absalon's choice was proved in succeeding years as the port grew into an important trading centre. Eventually, the place was adopted as the Royal headquarters and seat of government. The first city charter was granted to the burghers in A.D. 1254. The Freeport was established in 1894.

Description.

The port comprises the Naval Dockyard and the Commercial Harbour. The Naval Dockyard lies to the east of the Inner Harbour, extending from *Toldbodbommen* to *Kvaesthusbroen*. The Commercial Harbour consists of the Customs Port (which will form the main subject of the present article) and the Free-Port. The Customs Port is further divided into the Outer Harbour, which lies to the north of *Toldbodbommen*, the Inner Harbour between *Toldbodbommen* (the customs boom) and *Langebro*, and south of this, the South Harbour.

Photo E. Reinforced Concrete Wharf under construction, 1927, at Nordre Toldbod. Customs boom at entrance to Inner Harbour in middle distance, with Port Offices on right.

The following description mentions the harbour-works, constructions and establishments as they are met with when passing through the harbour from north to south (opposite to the direction of view in photograph A), and are shown by numbers on the map, thus:—(10).

In the Roads outside the harbour, there is a depth of about 40 ft., and good anchorage. Wind-bound sailing vessels and large men-of-war usually ride here.

Entering port from the Sound, a ship must navigate through the *Kronlob*, a fairway with a depth of 10 metres (33 ft.), and, having passed the entrance between the breakwaters, which have an opening of about 160 metres or 525 ft., one sees on the left the now dismantled fortification *Trekroner*, and on the right the newest and most important section of the port: the Freeport.

The Freeport.

The Freeport and its later extensions were built by the Port of Copenhagen Authority, which now holds an interest of 21½ million kroner in the undertaking. *Frihavns-Aktieselskabet* (The Freeport Company, Ltd.), which operates the Freeport on a concession, has itself defrayed the cost of building the warehouses, railway tracks, cranes, and other equipment. The profits of the Company are shared with the Port Authority, according to certain specified rules. Further information will appear in a subsequent article.

The Outer Harbour.

Outside of the Freeport lies to the north the 10-metre Basin (1), of which the southern and western quays are completed, altogether 666 metres, or 2,185 ft. For part of their length these quays have buttressed concrete walls, of the form shown as type 1 on the Supplement, built within cofferdams. Elsewhere, they are of reinforced concrete piled construction, executed in 1931, as shown in Fig. 1 and in the photograph B.

Large passenger liners berthed in this 10-metre Basin are seen in photograph C.

To the west of the northern part of the Freeport is the *Kalkbraenderihavnen* (2), a basin 6.3 metres deep, mainly

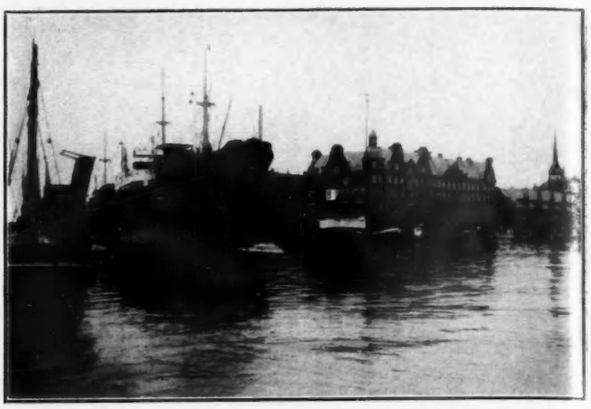


Photo K. Ship passing the Knippelsbro Lifting Bridge.

utilised for the unloading of coal and timber, and with a separate entrance channel from the Sound.

North of *Kalkbraenderihavnen* is the *Benzinhavn* (3), specially built for the storage of petrol and petroleum, where the "Dansk-Engelsk Benzin & Petroleums Co." and "Det Forenede Olie Kompagni" together can store 10,000 tons of these fuels. The entrance is closed by a floating steel boom, seen in the photograph, D.

At the entrance to the Freeport lies the *Redmolen* (4), utilised for the storage of fuel and lubricating oils. There are 19 tanks, with a capacity of 41,000 tons. This establishment lies within the customs limits of the Freeport, and therefore for fiscal purposes is treated as a free-port, whereas for administration it comes directly under the Port Authority.

Continuing now southwards from the entrance of the Freeport, through the channel of the Outer Harbour, we reach the *Bombroen*. This channel, on the western side of which are nine mooring-buoys for large vessels, has mostly a depth of 8.1 metres, or 27 ft.

On the right is the *Langelinie* (5), a promenade very much in favour with the population of the city. The quay wall fronting this promenade is now under re-construction, the work having recently been started. The total length of this quay, at which especially large foreign passenger steamers make their calls, is about 960 metres, or 3,150 ft., and the width will be about 20 metres, or 66 ft. The new wall is being built, commencing at the northern end, on a foundation of steel sheet-piling, in a depth of about 9 metres, or 29½ ft. See Fig. 2. By a recent decision, reached during progress, a future depth of 10 metres (33 ft.) is provided for and the design modified accordingly.

Beyond the Langelinie promenade is *Lystbaadehavnen* (6), the yacht harbour, on the left is *Revshaleoen* (7), with bunker-coal depots, and the largest shipyard in the country, that of Burmeister and Wain's Engineering and Shipbuilding Company (8). This establishment has one dry dock and two floating docks with capacities of 13,600 and 8,000 tons respectively, besides three slipways and six building berths. To this concern belong other plants elsewhere in the port, the total number of men employed in all its establishments, when working at full capacity, being normally 10,000 daily.

The Inner Harbour.

Passing the *Toldbommen* (9), or site of the Customs boom (see photograph E), where a ferry runs over to the *Flaadestationen*, the Naval Base (10), on the left of the channel, on the right there are the Customs: *Nordre Toldbod* (11), where the office building of the Port Authority is situated,

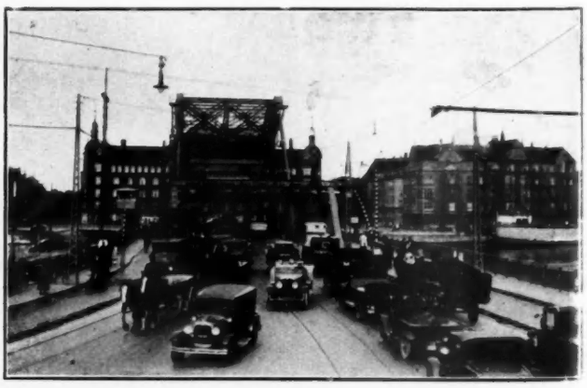


Photo N. Traffic on the Bridge of Langebro.

The Port of Copenhagen

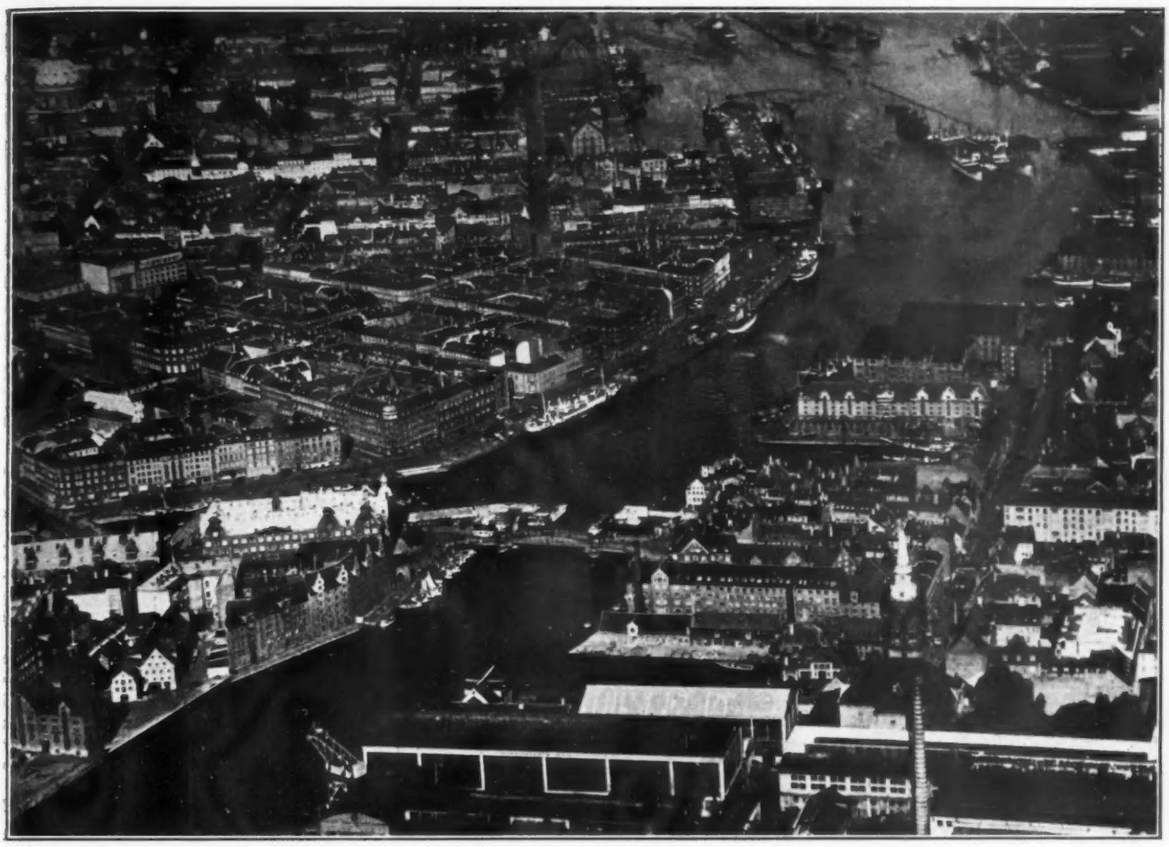


Photo L. Aerial view showing Knippelsbro Bridge, with Inner Harbour beyond. In centre, the Havnegade Quays, berthing passenger boats for Sweden.

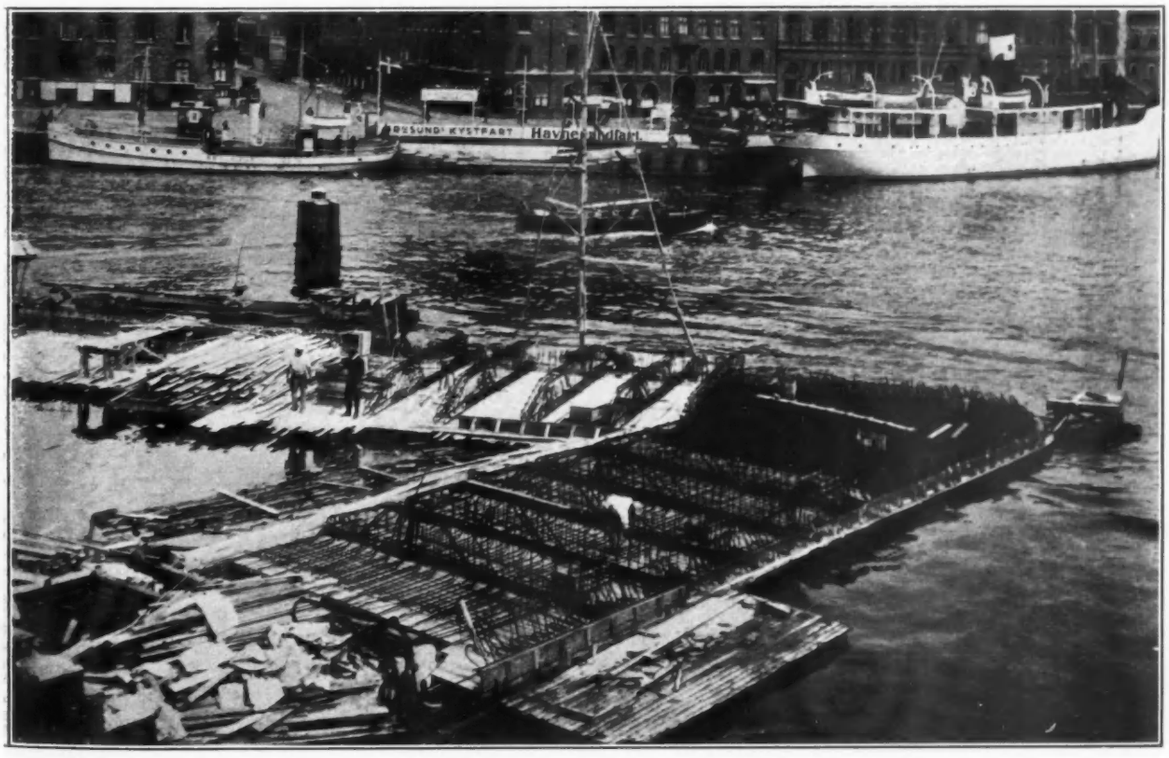


Photo M. Reinforced Concrete Quay under construction, 1933, near the Stock Exchange.

The Port of Copenhagen—continued

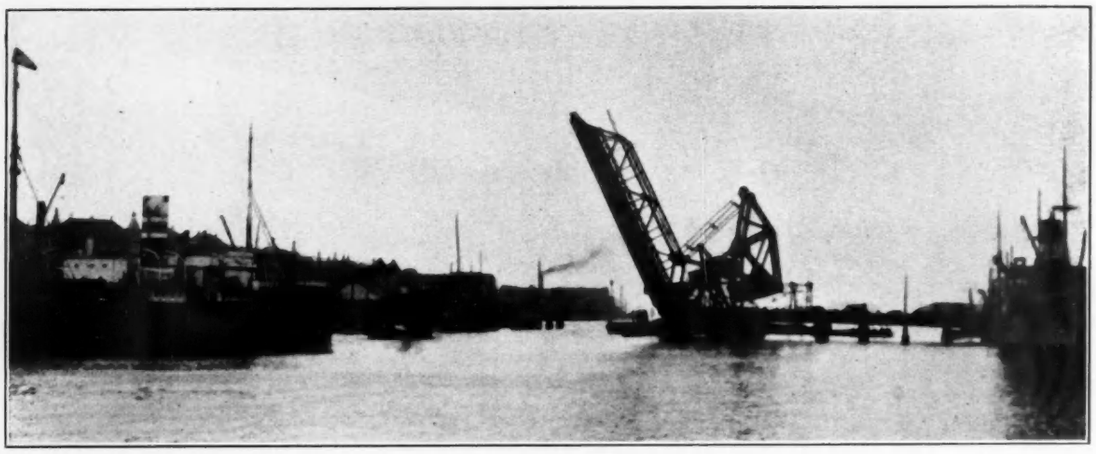


Photo O. Langebro Bridge.

and *Sondre Toldbod* (12), with the Customs offices for general goods. The Customs wharves, with depths of 7.5 and 6.9 metres, or 24½ ft. and 22½ ft., are for ships loading and discharging general goods to and from foreign ports. See photograph F.

The Customs quays continue into the quays at *Larsens Plads* (13), and the grain-drying silo (14), with depths of 8.1 and 7.5 metres respectively, with old grain-warehouses at the rear for the storing of imported forage.

The quay at *Larsens Plads*, together with *Kvaesthusbroen* (15), also on the west side of the harbour, as shown by the aerial photograph G, are used by the largest Danish steamship company, "Det Forenede Dampskibs-Selskab," for the transit of passengers and goods mainly to Danish ports.

Having passed *Kvaesthusbroen*, the *Nyhavns Kanal* (16), leading to the *Kongens Nytorv* Square (a focal centre of municipal life and traffic), lies on the right, and the *Kristianshavns Kanal* (17) on the left; both of these short canals are used by small vessels. Two other views of the Inner Harbour are seen in photographs H and J.

After passing *Kristianshavn*, the *Knippelsbro* lifting bridge (18), is now right ahead in the 7.5-metre channel. This is shown by the photograph K (the opening span being lifted for a ship to pass), and by the aerial view L. On the right in our course (but on the left in the aerial view) are the quays of *Havnegade* (19), where the passenger boats for Sweden and Bornholm call, while to the left are the *Gronlandske Handels Plads*, the wharves of the Greenland Trading Company (20), Burmeister and Wain's other shipyard (21), with three floating docks and two building berths, and " De Forenede Oplagspladser " (United Storages) (22), where ships to and from the Faroes and Iceland have their berths.

Before passing *Knippelsbro*, one sees *Borskanalen* (The Exchange Canal) (23), along the front of the 300-years-old Stock Exchange Building (24). A reinforced concrete quay was built here in 1933, as shown under construction in the photograph, M.

Having passed *Knippelsbro*—a Strauss bascule bridge, built in 1908, and replacing the former bridge at this place—the *Langebro* bridge (25) looms up ahead; on the right is first the storehouse of *De danske Sukkerfabrikker* (The Danish Sugar Factories) (26), and next the quays of *Kristiansgade* (27), used by four of the large export vessels which every Thursday leave for England with agricultural products; on the left the erecting shop of Burmeister and Wain, Ltd. (28), in front of the engineering works in the rear, whose speciality is making Diesel motors for ships, and next comes the refinery of the Danish Sugar Factories (29), with an output of 80,000 tons of sugar a year.

The *Langebro* bridge, a rolling-lift bridge, was built in 1930, and intended merely to be a temporary structure in replacement of a former bridge there. Two photographs (N and O) show it viewed from roadway and waterway respectively. It is

Photo P. Reclamation of Land and formation of Quay, in 1931, at the Fishing Harbour.

The Port of Copenhagen—continued

intended, eventually, to rebuild both these bridges, *Knippelsbro* and *Langebro*, with greater head-room for passage of small craft without opening them.

Passing *Langebro* bridge, the South Harbour is the next stage.

The South Harbour.

Just on the right is a row of coaling berths and depots with quays of a depth of 6.9 metres (22½ ft.) in the so-called *Gasvaerkshavn* (Gas Works Harbour) (30), while to the left are the extensive quays of *Islands Brygge* (Iceland Wharf) (31), of the construction shown as Type 2 on the Supplement, and used for a variety of purposes: unloading of sand, stone, lumber and coal; and towards the south stands *Soyakagefabrikken* (the Soya Cake Factory) (32). The large motor-ships of the East Asiatic Company, Ltd., bring from the Far East large quantities of soya beans and ground-nuts, from which the Soya Cake Factory produces about 60,000 tons of oil and 125,000 tons of cattle food a year.

Beyond the south end of *Islands Brygge*, there is on the right the entrance to the Fish Harbour (33), a minor boat-harbour having also a timber wharf with 5 metres (16½ ft.) of water, where, in 1931, an area of land was reclaimed behind sheet piling, as seen in photograph P. Next is *Enghave Brygge* (34), a quay with 6.3 metres (20½ ft.) of water generally, but partly rebuilt in 1928 to greater depth, mainly used for unloading coal; for instance, for supplying the City's power-station *Orstedsvaerket* (35), which is situated near the quay. North of the power-station a 4-metre channel leads to a small industrial harbour, *Frederiksholms Havn* (36).

Proceeding past *Islands Brygge*, one passes southwards through a 7-metre channel into the recently completed industrial harbour, *Teglvaerkshavnen* (the Tile-Field Harbour) (37), where there are a number of industrial plants, among them being the Ford Motor Company's assembling factory. At the east side of this harbour is an artificial island called *Teglholmen* (38). This island is composed of "fill," retained by concrete walls of unusual form, of great interest to engineers, as shown by type 3 on the Supplement and photograph Q. Burmeister and Wain, Ltd., have erected a steel foundry and pressing plant for forgings, with a capacity of 15,000 tons of steel castings and 12,000 tons of forgings a year. At the west side of *Teglvaerkshavnen* lies a ship-yard called *Sondre Vaerft* (39), with four dry docks. It has been acquired by Burmeister and Wain, Ltd., and is no longer used as a shipyard, but serves as engineering works. At the south end of this harbour, there are quays for discharging coal.

South of *Teglvaerkshavnen* the water area of the harbour—at this place called *Kalveboderne*, is dammed by a 2,230-metre (1½-mile) embankment (40), 30 ft. wide at top, in which is formed a lock chamber with 3.7 metres (12 ft.) of water, a length of 53.3 metres (175 ft.) and a width of 11.3 metres (37 ft.) for the passage of small ships. In addition, the embankment has 28 freshening sluices, by means of which the flow through the harbour may be regulated. The embankment was built in 1903, because after considerable deepening by dredging, the flow of water in the harbour, during stormy weather, grew so violent that it caused serious inconvenience to navigation.

South of the lock, a channel of 3.1 metres (10 ft.) depth, called *Sorte Rende*, for the use of small craft, leads to Koge Bay in the southern part of the Sound.

Extent of the Port.

The distance from the breakwaters at the north to the embankment at the south is 8.4 kilometres, or 5¼ miles. The water areas used as basins and fairways total 423 hectares, or 1,047 acres. The land areas belonging to the harbour amount to 287 acres, including 82 acres of streets and quays; in addition, the land area of the Freeport covers 130 acres.

The total length of the quays is 36 kilometres (22½ miles), of which about 22 kilometres (14 miles) are stone or concrete quays and the remainder wooden wharves. The Government and the city own about 1.5 kilometres (1 mile) each, 9 kilometres (5½ miles) belong to private concerns, and the remainder of the quayage is owned by the Port Authority, 18.3 kilometres (11½ miles) in the Customs Port, and 5.7 kilometres (3½ miles) in the Freeport.

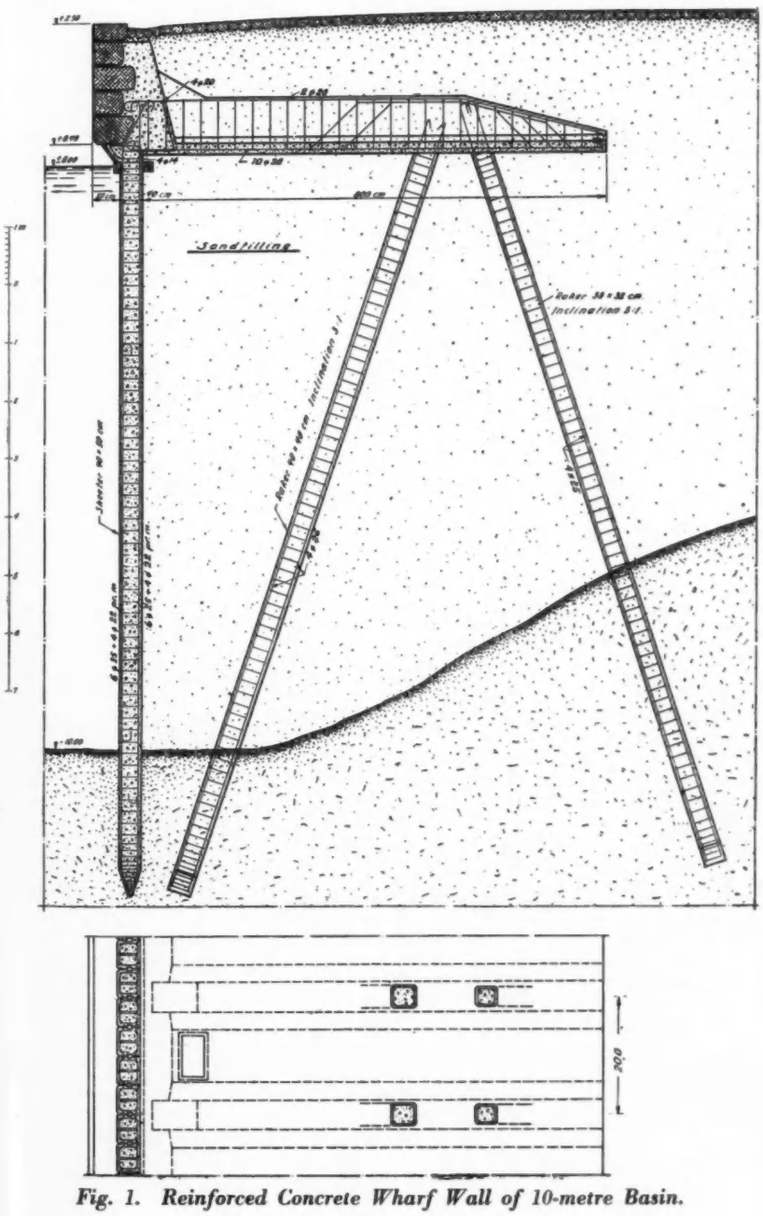


Fig. 1. Reinforced Concrete Wharf Wall of 10-metre Basin.

Railway Tracks.

Along the deep-water quays there are railway tracks, generally double track, belonging to the State Railways. In the Freeport, the quay tracks belong to the Freeport Company, and the making up of the trains is done by the Company's own locomotives.

Cranes.

In the Customs Port there are one 75-ton floating crane, two 40-ton floating cranes, two 100-ton stationary cranes, one travelling crane of 40 tons capacity, two 25-ton and two 10-ton stationary cranes and several smaller cranes, besides 29 coal elevators, a pneumatic grain elevator plant, capable of lifting twice 50 tons, and some smaller elevator plants.

In the *Freeport* there are one 8-ton, eight 5-ton, ten 3-ton, twenty-five 2½-ton, and seven 1½-ton travelling cranes, besides two stationary 5-ton derricks and some stationary manually-operated cranes. There are also seven coal elevators with a capacity of 80 tons per hour. At the silos are three sheer-legs, capable of lifting 120, 150 and 200 tons per hour respectively, five pneumatic elevators, each with a capacity of 100 tons per hour, and four with a capacity of 50 tons per hour. There are three grain silos with storage space for 3,400 tons, 10,000 tons and 11,000 tons of grain respectively, and a coal silo with 60,000 tons storage capacity.

Floating Plant.

The Port Authority owns one ice-breaking steamer of 1,800 i.h.p., and two ice-breaking tug-boats of 350 and 90 i.h.p. respectively, besides several smaller steam and motor-boats for patrolling, towing, etc., one 40-ton floating crane and six smaller barge cranes, two dredgers, eight automatic dumping barges, and 33 ordinary barges.

The Port of Copenhagen—continued

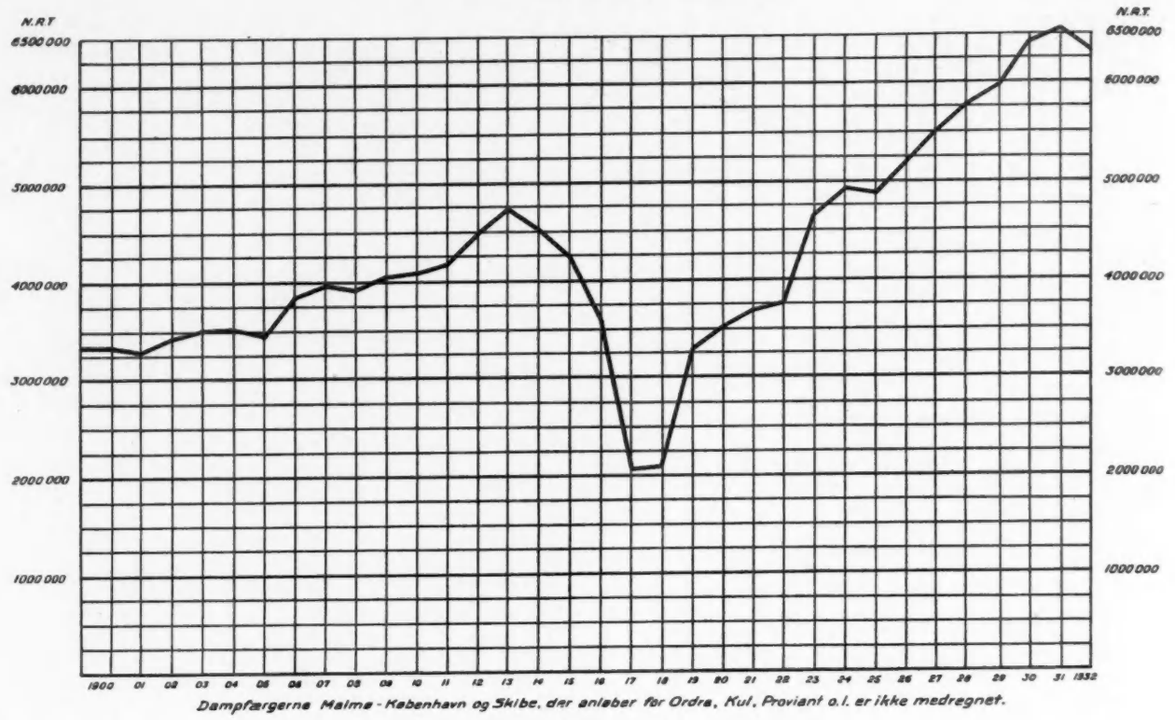


Fig. 3. Net Register Tonnage of Inward Shipping.

Salvage Steamers.

The Switzer Salvage Company has its headquarters at Copenhagen, where salvage steamers equipped with the best apparatus are always lying ready to assist vessels in distress at the shortest notice. The Company also has salvage steamers stationed in several provincial harbours.

Wireless Telegraph Station.

This station serves the exchange of telegrams with wireless stations of ships at sea.

Arrangements and Accommodation of the Harbour.

The quarantine station of the harbour is located at *Nordre Toldbod*, (11) on map.

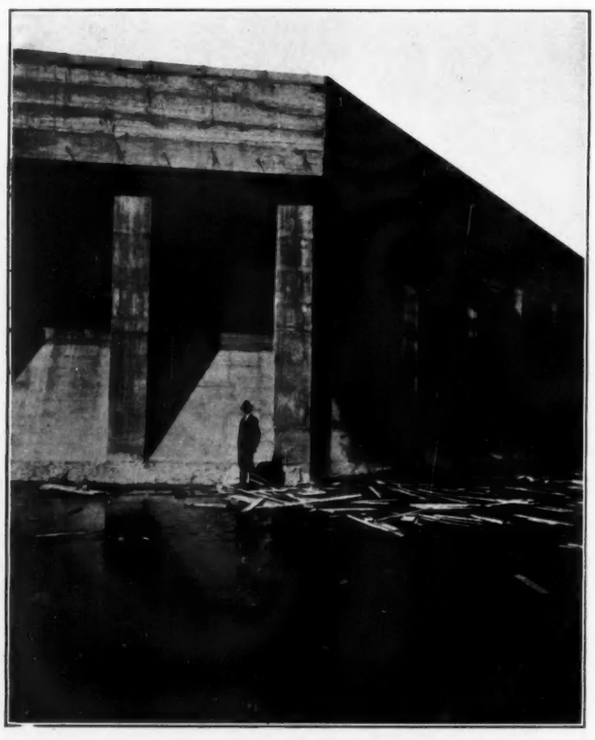


Photo Q. Concrete Quay Wall surrounding artificial island, "Teglholmen."

There are 14 different Customs offices in various parts of the harbour. Storm-signals are given from a mast on the old crane at the Naval Dockyard.

Time-signal is given at noon, Greenwich mean time. There is a pilot-station in the building of the Port Authority, and another in the pilot-boat in the fairway between the breakwaters near the island forts of *Trekroner* and *Middelgrunden*.

The employment of pilots is not obligatory, but generally depends on the tonnage and draught of the vessel.

Ships are supplied with fresh water either through hydrants on the different quays or from water-boats, and ballast (generally sand) is supplied from boats.

The Harbour Administration.

The Port of Copenhagen is an autonomous institution under the Ministry of Public Works, but having its own Board and finances. It is governed by the Harbour Board with the Mayor of Copenhagen, as chairman, and 16 members, one appointed by the Minister of Public Works, one by the Minister of Commerce, two by the Upper House, two by the Lower House, two by the Magistrates of Copenhagen, two by the City Council of Copenhagen, two by the Committee of the Merchants' Guild, two representatives of shipping, and two for the industries, elected by the principal organisations of ship-owners and manufacturers respectively.

Certain decisions of the Harbour Board are subject to the approval of the Minister of Public Works as, for instance, port charges, harbour regulations, etc.

The working of the harbour is in the hands of the Director of the Port or General Manager, as head of the daily administration, under whom one department, the Harbour Police, is managed by the Harbourmaster, and another, the Construction Department, by the Chief Engineer of the Harbour.

Port Charges.

The charge for ships is at present 15 Ore (2d.) per net registered ton of the vessel, and 10 Ore per ton of cargo unloaded and/or loaded at the quays. Ships lying alongside another ship or at buoys or dolphins pay 5 Ore.

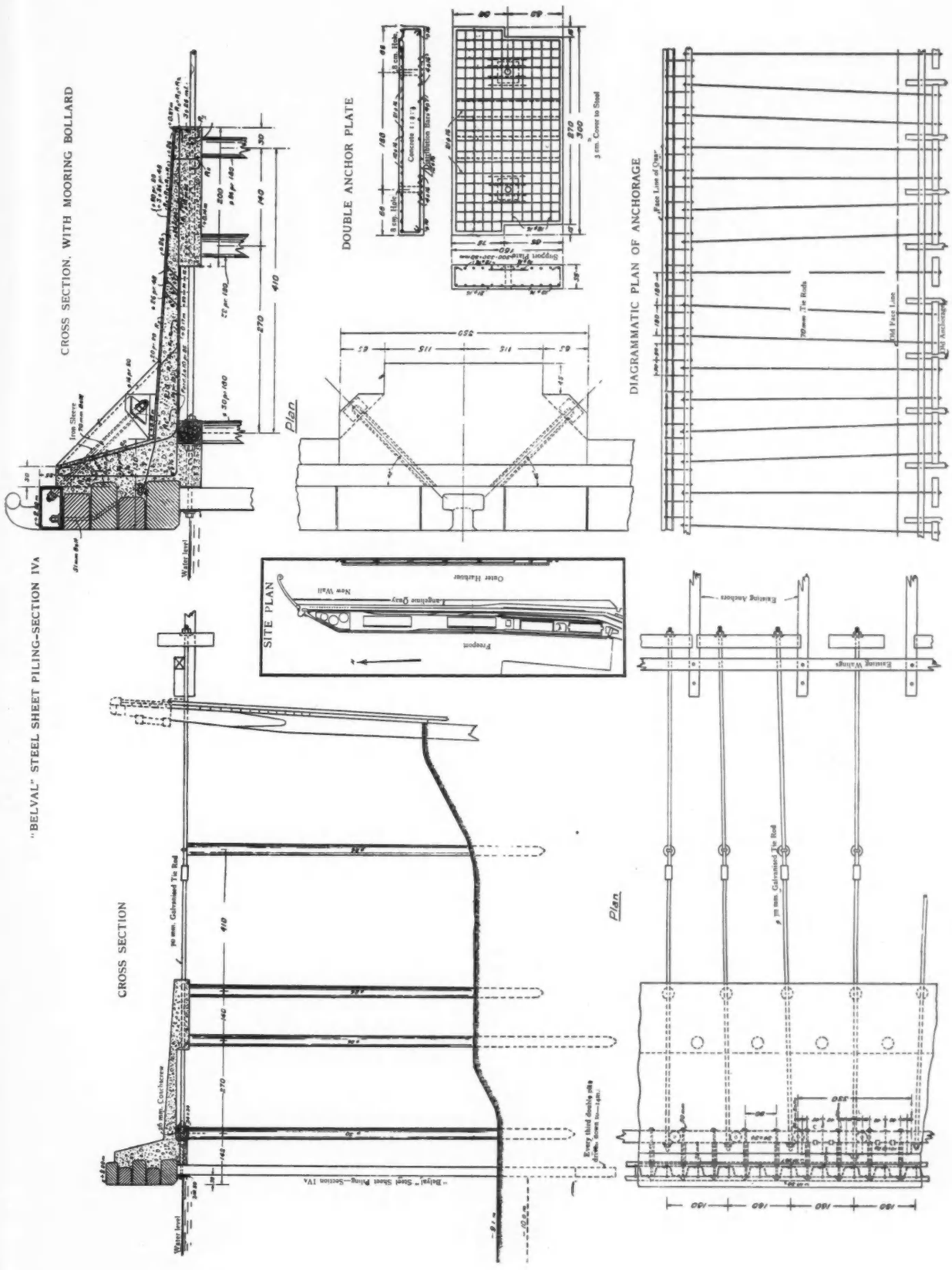
There is no loading charge for bunker coal or oil, provisions and ballast, to be used on board the vessel itself. Ships calling at the port with the sole object of taking bunker coal or oil, or provisions, or other supplies, are free of charges for four days. For all goods arriving by sea from foreign countries, the receiver pays according to a special schedule, depending on the nature of the goods, but all goods arriving and intended for re-shipment are free of charges.

The Port Finances.

The annual accounts show an income of about six million Kroner (£330,000), out of which are defrayed the costs of management and maintenance, depreciation and interest, and amortisation of loans.

The Port of Copenhagen

East Mole, Langelinie Quay: East Wall



The Port of Copenhagen—continued

In the balance sheet, the assets of the Port—the value of buildings, harbour works and capital—amount to about 66 million Kroner (nearly £4,000,000, at par).

Traffic in the Port.

As a general rule, the traffic in the Port has been increasing from year to year, with the exception of the abnormal periods of the War and the present economic world crisis. The net register tonnage of shipping entering in 1932 was 6,300,000 tons: see Fig. 3.

Regarding the ships engaged, taking, for example, the figures for 1931, 21,773 of the ships arriving at Copenhagen with cargoes and in ballast, were steam and motor-ships (not including the steam-ferries between Copenhagen and Malmö, nor ships calling for supplies, provisions, coal, etc.), amounting to an inward total of 6½ million net registered tons, and 724 sailing-ships totalling 90,000 net registered tons, making 6,590,000 net registered tons in all.

Goods Inwards and Outwards.

The Imports consist mainly of fertilizers, coal, oil, petrol, petroleum, iron, machinery, timber, textiles, tar, flax, coffee, rice, grain, sugar, etc., and the Exports of grain, butter, cheese, pork, bacon, eggs, horses, cattle, seeds, wool, hides, machinery, fertilizers, textile articles, chemicals, etc.

The total imports via Copenhagen amount to about 4½ million tons annually and the exports to 1¼ million tons. The big difference is due to the fact that the most goods imported to the country arrive at Copenhagen, while exported goods, mainly agricultural produce, are mostly shipped via Esbjerg and other ports.

Copenhagen's Sea Communications.

The Port of Copenhagen is connected with most of the other ports of the country through steam and motor-ships sailing on fixed routes.

The traffic to the port from foreign countries consists mainly of ships with coal and coke from England, Germany and Poland, as well as with raw materials for the industries, and with feeding stuffs.

There are also several sailing-ships arriving with timber from Sweden and Finland, as well as a large number of vessels with general goods from foreign ports, also a considerable trans-oceanic traffic by liners to and from most of the large ports of the world, and, lastly, the transhipment of goods to the Baltic.

The Port is always open to traffic. When the fairway and basins become ice-bound—which happens about every fifth year—the powerful ice-breaking vessels of the harbour keep navigation open.

Acknowledgments are due to the Port of Copenhagen Authority and, in particular, to Mr. G. Lorenz, their Chief Engineer, for much of the information upon which this article is based.

Vickers, Ltd.

The Directors give notice that the following Final Dividends for the half-year ended 31st December, 1933, will be paid to the holders of the Preferred Stock and Preference Shares of the Company, who are registered in the books of the Company on Saturday, the 3rd March, 1934:—

> 2½ per cent. on the Preferred 5 per cent. Stock (less Income Tax); 2½ per cent. on the 5 per cent. Preference Shares (less Income Tax); 2½ per cent. on the Cumulative Preference Shares (free of Income Tax).

Payment will be made on Thursday, the 29th March, 1934. The Registers of Members relating to these Issues will be closed from Monday the 5th to Saturday the 10th March, 1934, inclusive.

Manchester Ship Canal Company.

The Directors of the Manchester Ship Canal Company, at a meeting on February 12th, resolved to recommend the declaration of the following dividends at the Ordinary General Meeting held on the 26th February, viz.:—

> 3½ per cent. on the Manchester Ship Canal Corporation Preference Stock, same as last year; 2 per cent. on the Preference Shares, as compared with 1 per cent. last year; 1 per cent. on the Ordinary Shares, as compared with ½ per cent. last year.

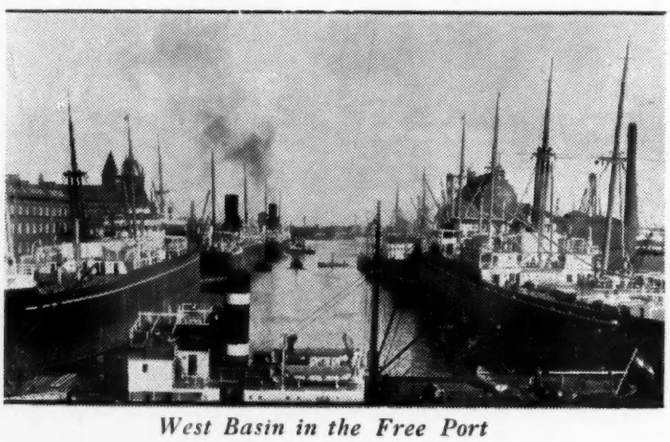
£35,000 has been placed to reserve for contingencies and repairs, as compared with £25,000 last year, and £34,608 has been carried forward, as compared with £34,166 last year.

THE PORT OF COPENHAGEN

CUSTOMS HARBOUR AND FREE PORT

The Logical Central Point for all Trade on the Baltic

The CHEAPEST PORT of SCANDINAVIA



West Basin in the Free Port

No Tide

Most Modern Facilities

No Warehousing Charges for Transit Goods Re-forwarded within Two Weeks

Apply to Port Authority and Copenhagen Free Port Co., Ltd.

Port of Southampton Topics

Dock Statistics for January.

The principal headings in Southampton Docks statistics for January show increases, compared with the corresponding period last year, but there are decreases in certain directions.

The number of vessels entering the docks dropped from 197 to 173, and those departing from 195 to 174, but the tonnage returns showed a big advance.

The gross tonnage inward was 975,745 tons, as compared with 966,189 tons in January, 1933, whilst outward the total was 1,057,707 tons, as compared with 918,118 tons. The respective increases were, therefore, 9,556 tons inward and 139,589 tons outward.

The net tonnage total was also satisfactory, for, although the tonnage inward dropped by 8,786 tons, being 505,687 tons, as against 514,473 tons in the corresponding month of 1933, the outward figure showed an increase of 64,766 tons. The figure for the month in that case was 550,356 tons, as against 485,590 tons.

The cargo position of late has given ground for satisfaction and both imports and exports showed an increase in the past month, the former mounting by 7,440 tons and the latter by 2,189 tons. Inward cargo totalled 38,500 tons, as against 31,060 tons, and outward 28,025 tons, as compared with 25,836 tons.

The passenger returns were not so pleasing. Inward the total dropped from 8,077 to 6,356, but outward there was an increase, the figure rising from 7,556 in January, 1933, to 8,904. The inward drop amounted to 1,721 passengers, and the outward rise to 1,348.

The number of troops who passed through the port during the month showed a considerable decrease, for the inward figure was only 1,724, as compared with 6,507. Outward the figure was 2,753, as against 2,579. Rise or fall in this traffic is dependent entirely upon the length of the voyages undertaken by the transports and in what order those voyages are made. One month usually balances another.

Ellerman's City Line to call at Southampton.

Another addition to the list of companies making use of Southampton as a base for pleasure trips is revealed by the decision of the Ellerman's City Line to send their "City of Nagpur" here for a series of cruises.

This will be the first occasion any "City" ship has used Southampton for pleasure purposes. Passenger vessels on the Bombay service and cotton-seed cargo ships of the Ellerman interests have been dealt with at the docks in the past, but the coming of a pleasure cruiser is of more than ordinary interest.

Death of Commander J. A. Rupert Jones, R.N.R.

Commander J. A. Rupert Jones, R.D., R.N.R., F.R.A.S., hydrographical surveyor to Southampton Harbour Board, the man who has been behind the Board's schemes for improving the approaches to Southampton, died suddenly in his office at Southampton on February 5th.

It is eight years since the rapid extension of the dredging work of the port made it necessary to appoint an official to deal with that aspect of the Harbour Board's activities specially, and in the Commander they found a man whose concentrated effort has produced excellent results. Since he was appointed in December, 1925, dredging schemes, involving an expenditure of over £440,000, have been undertaken.

60,000-ton Floating Dock to be Sold.

The announcement by the Southern Railway Co. that they might dispose of their 60,000-ton floating dock, which has been at Southampton for many years, providing a suitable offer was received, did not come as a great surprise in Southampton.

With the completion of the King George V. graving dock, Southampton now has facilities for the dry-docking of vessels of any size, and the "floater" is now no longer needed, especially as it has heavy maintenance charges.

The floating dock, which is ten years old, cost between half a million pounds and three-quarters of a million to build, and it is probable that not half the cost of construction has been returned to the owners in the form of dry-docking rates and charges. Even so, all the earnings have not represented profit, for, apart from maintenance, the structure has had to be removed three or four times to permit of the "bed" into which it sinks when about to receive a ship being restored by dredging to the required depth.

It is stated that inquiries for the dock have been received from Japan and Brazil. It is also suggested that the Admiralty or the Tyne Improvement Commissioners may consider its acquisition.

Otago Harbour, New Zealand

Harbour Improvement Scheme

With the object of improving the entrance to the Port of Otago, and with the further object of improving the channel depths and to provide further facilities for the handling of cargo to meet the requirements of the class of vessels visiting the Dominion, the Board, some few years ago, embarked upon a comprehensive harbour improvement scheme, involving an expenditure of £350,000.

The principal works of this scheme were as follows:—

1.—The acquisition of a powerful and up-to-date dredge. (This vessel was built by Messrs. Fleming and Ferguson, Ltd., at Paisley, Scotland, and since her arrival has carried out exceptionally fine performances in maintenance and developmental dredging).

2.—The reinstatement of the Mole at the entrance to the Port.

(This is considered as one of the most important works undertaken by the Board, and it was embarked upon with the object of improving the entrance to the port and channel depths. The work has proceeded with expedition since its inception, and close observations indicate that the desired effect is being achieved. The super-structure of 4,100-ft. approximately has been completed, and the stone work is nearing completion).

3.—Railway Connection and Extension of Victoria Wharf, Dunedin (the main overseas berth).

(The extension and reconstruction works have been completed and the necessary cross-overs for railway sidings have been laid, but the question of linking-up with the main railway system is at present under consideration between the Railway Department and the Board, and it is hoped that this matter will be finalised in the near future).

4.—New cargo shed and cargo-handling appliances at Dunedin.

(A new concrete cargo shed, 320-ft. by 40-ft., has been erected at Rattray Street, and two 3-ton electric luffing cranes have been installed at Victoria Wharf).

Owing to the prevailing economic conditions, other works of this scheme are being held in abeyance.

Dredging.

At the present time, vessels drawing over 23-ft. have to discharge or load at Port Chalmers, but in order to enable vessels drawing up to 25-ft. to berth at Dunedin, the Board set down a dredging policy to obtain a depth of 22-ft. at low water in the Victoria Channel, which leads from Port Chalmers to Dunedin.

With this object in view, a definite dredging programme has been carried out for some time—but, for economic reasons, a restricted programme has been in operation during the past eighteen months—and it is anticipated that this objective will be reached in a very short time.

The result of this achievement will mean that vessels drawing up to 25-ft. will be enabled to berth at Dunedin Wharves, which are practically in the heart of the City.

Reclamation Works.

In order to provide for the economical disposal of spoil from the dredges, an area of some 180 acres at Dunedin was, some years ago, enclosed by a retaining wall, and recently the reclamation of a 45-acre paddock was commenced and has been practically completed.

In consequence of the dredge being shifted to the Lower Harbour to improve the channel to Port Chalmers, the reclamation of 23 acres at Mussel Bay, Port Chalmers, was commenced, and when completed will form a valuable addition to the Board's lands in that locality.

It may be of interest to record that to date some 700 acres of tidal lands have been re-claimed from the harbour, and this land, comprising as it does a portion of the commercial centre of the City of Dunedin, has added materially to the Board's revenue.

PORT AUTONOME DE BORDEAUX

(BORDEAUX - BASSENS - AMBES - BLAYE - PAUILLAC - LE VERDON)

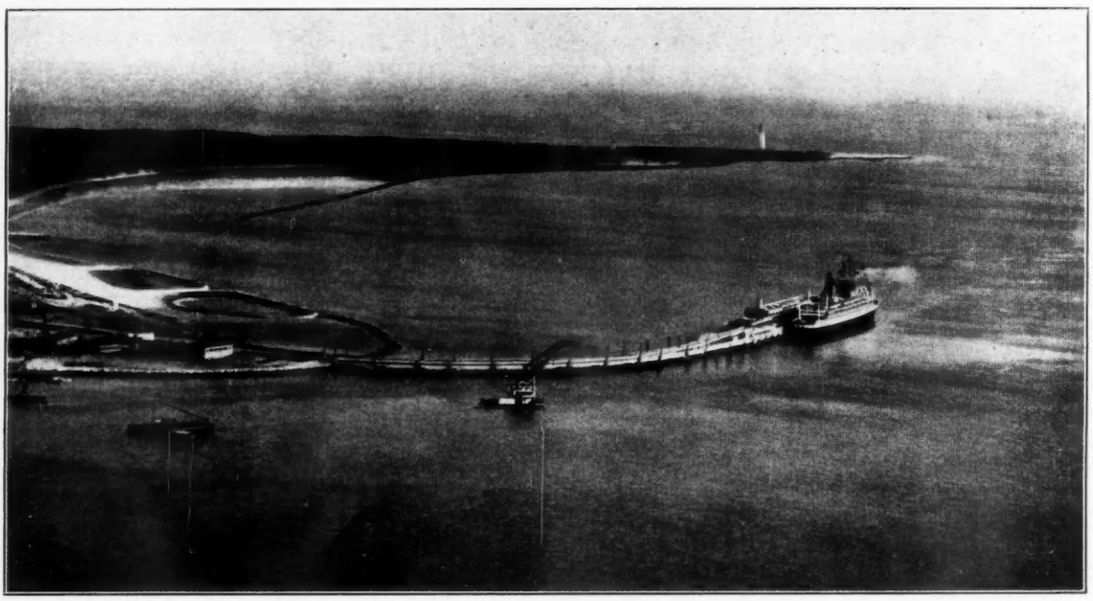


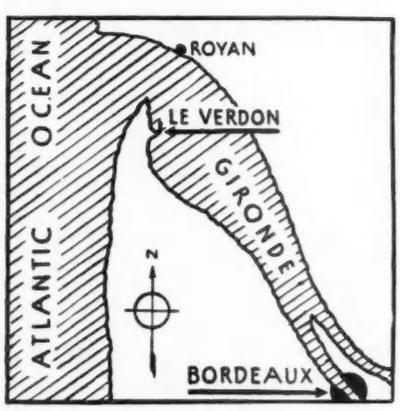
Photo Cie Aérienne Française

- Air view of LE VERDON, port of call of BORDEAUX -
(in the background, Pointe-de-Grave and the estuary of the Gironde)

The new landing stage of Le Verdon, situated at the mouth of the Gironde, on the left bank of the river, is accessible at all tides for the greatest ships of the world.

Available length on both sides—1,140 feet.
Width—145 feet.
Minimum depth at low water—40 feet.

The maritime station built on the landing pier, possesses every convenience for transatlantic passengers. The landing stage is connected directly with Bordeaux by an electric railway and a new road. The distance between Le Verdon and Bordeaux is only 60 miles.



For all information, apply:—

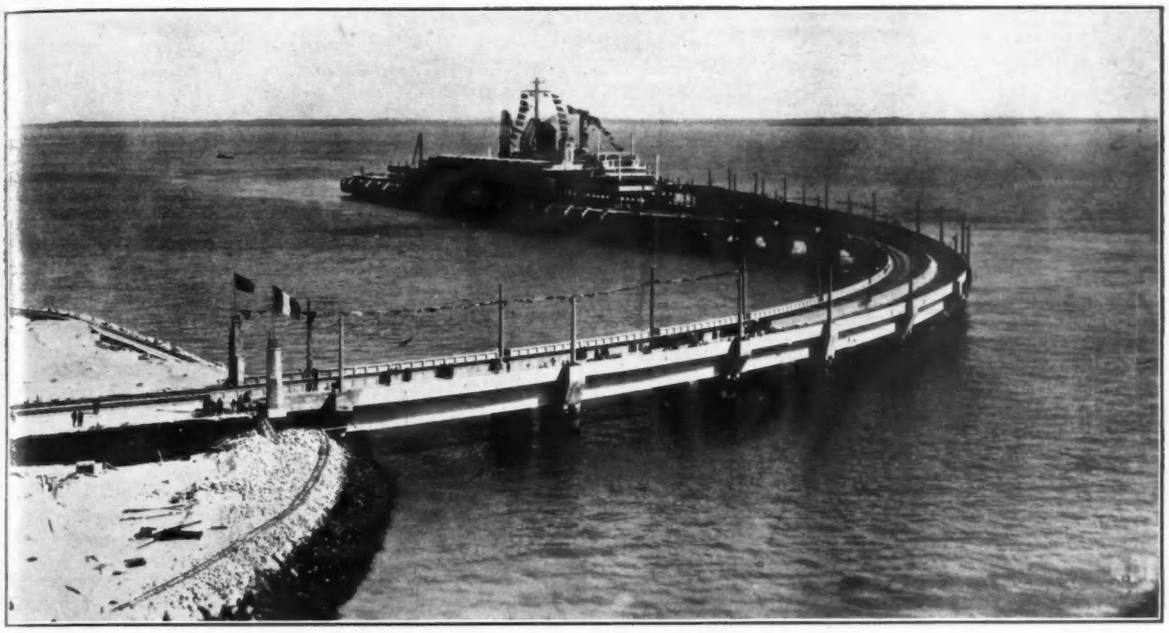
M. le Directeur du Port Autonome de Bordeaux
Palais de la Bourse - Bordeaux (France)

SI PREGA FAR MENZIONE DEL "DOCK AND HARBOUR AUTHORITY" QUANDO SCRIVETE.

The Port of Bordeaux

Inauguration of the Outport of Verdon

(Translated from the French)



General view of the Jetty of Verdon.

IT is well known that the self-governing Port of Bordeaux has been pursuing, for the past eight years, the fulfilment of an extensive programme of works, affecting on the one hand the improvement of the navigation between Bordeaux and the Atlantic Ocean, and on the other hand the reconstruction and reorganisation of nearly the whole of the maritime accommodation in and around the port.

This programme is almost accomplished, and Bordeaux is now able to compete with the most up-to-date ports of Europe in respect of facilities offered to traffic, whether passengers or goods.

Among the achievements of 1933 may be specially noted the restoration to service of quayage at Bordeaux itself, on the left bank of the river, after entire reconstruction. A length of 350 metres (1,150 ft.) of modern quayage is thus rendered available for vessels drawing 8½ metres (26 ft.) of water. These quays, like all others on the left bank, are provided with commodious transit sheds, well lighted and equipped with high-speed electric machinery, suitable for handling general cargo.

But the event of the year, having the greatest significance for the Port of Bordeaux, has undoubtedly been the inauguration of the outport of Verdon, at which the liner "Champlain," of the "Compagnie Générale Transatlantique," made a call on the 22nd July, landing several hundred tourists from New York bound for Paris and Lourdes.

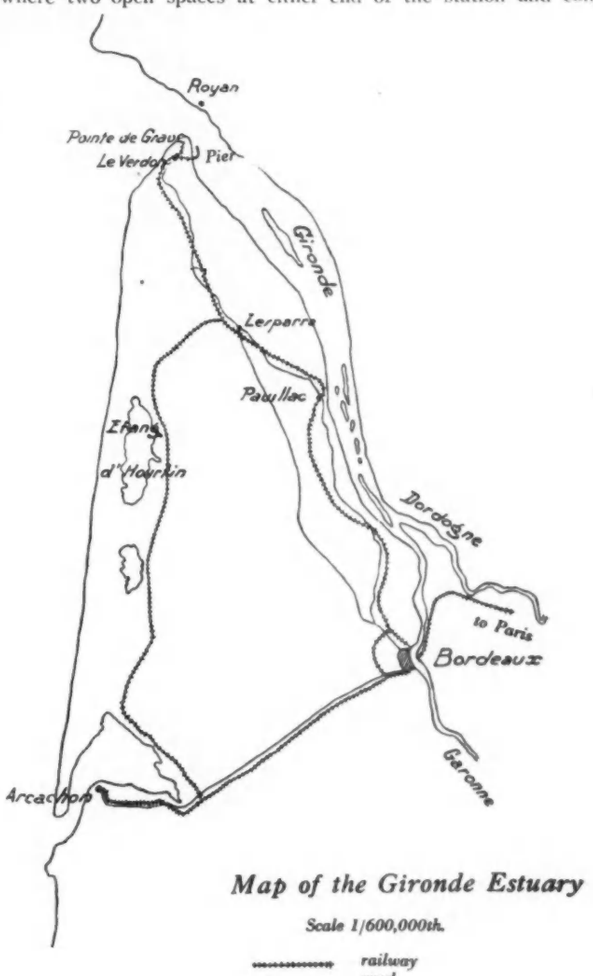
* * * *

Situated on the estuary of the Gironde on the left bank of the river (see sketch map), in deep but sheltered water, the outport of Verdon forms an integral whole with the port of Bordeaux, of which it is the complementary part that has been awaited for many years. It is a work broadly conceived and entirely modern, which reflects the greatest credit on the technical skill and the courage of the engineers who have designed and carried it out.

The essential feature is a berthing jetty placed out in the river, having a length of 317 metres (1,040 ft.) and width of 38 metres (125 ft.), and consisting of a rectangular reinforced-concrete deck, carried on cylinders of the same material, founded in the solid ground at more than 8 metres (26 ft.) below the river bed.

A curved viaduct of similar construction, 372 metres (1,220 ft.) long, connects this jetty with the land, where the shore installation comprises a railway station, sorting sidings, sheds, etc.

Upon the jetty, at which ships lie alongside, an immense marine railway station has been built, 140 metres (460 ft.) long, with ground floor and upper storey, affording all conveniences required by ocean travellers. Cranes of wide outreach effect the transfer of goods between the ship and the jetty. Trains run on four tracks at main-deck level, and motor cars rise by an easy inclined way to the upper-deck level, where two open spaces at either end of the station and con-



Map of the Gironde Estuary

Scale 1/600,000th.

railway
road

The Port of Bordeaux—continued

The Jetty and the Marine Station at Verdon. In the distance the Pointe-de-Grave and the Gironde Estuary.

nected by a covered passage give plenty of room for parking the vehicles.

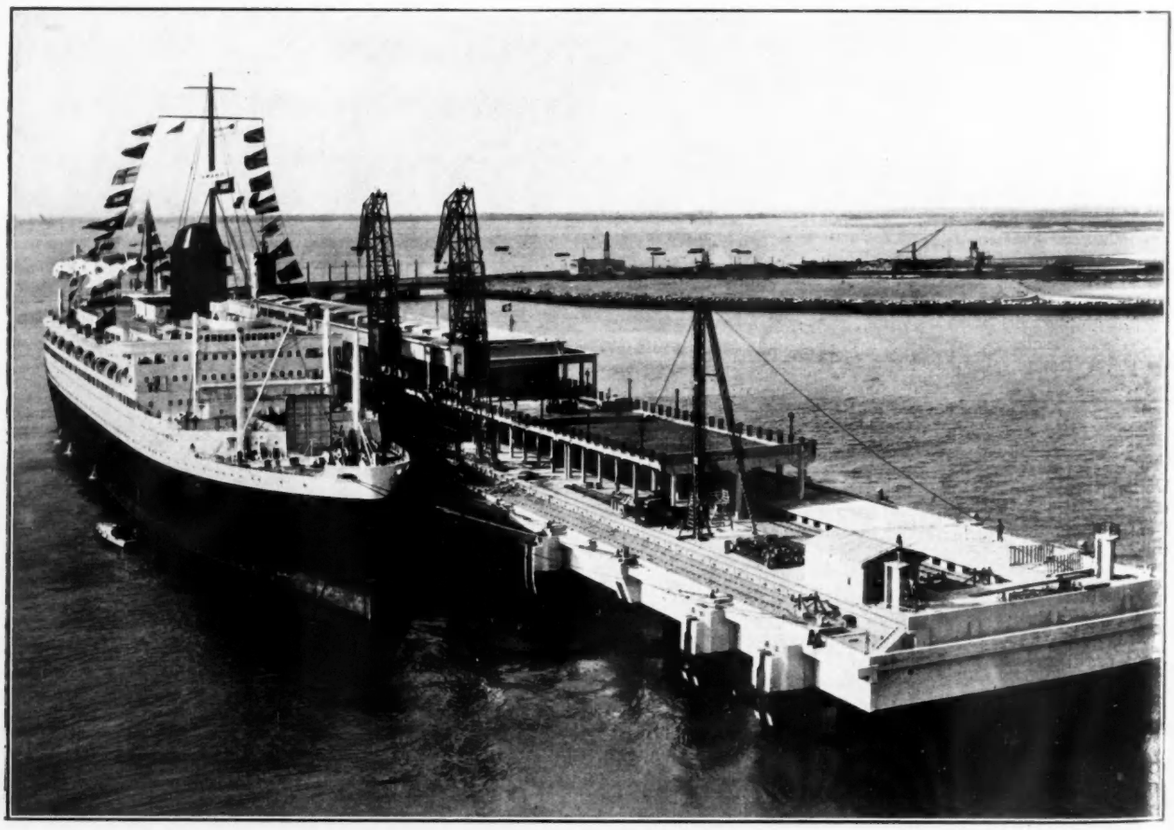
The railway and the motor track run side by side along the viaduct without crossing each other. They are connected respectively with the railway and the road which run direct from Verdon into Bordeaux, 100 kilometres (62 miles) away. This distance, on completion of the electrification of the line, now in progress, will be covered in an hour and a quarter. The road also, a wide modern motor-way, permits of high-speed travel.

* * * *

Verdon is intended to fulfil a double function, as a time-saving outport and as a port of call.

As an outport, for the saving of time, Verdon receives vessels bound for Bordeaux as soon as they arrive in the Gironde, and enables passengers being landed immediately, to pursue their journey at once and at express speed to Bordeaux or beyond, either by road or rail. They thus avoid the exasperating delays that arise from tide or fog and all the various obstacles to progress throughout the tedious river passage from Verdon to Bordeaux, which the vessel itself follows later when conditions are favourable.

On the outward journey, conversely, passengers travel overland to Verdon where they can embark at the last minute on the ship which left Bordeaux on an earlier tide and can sail from Verdon exactly to time-table.



The liner "Champlain" of the Compagnie Generale Transatlantique, moored alongside the Jetty at Verdon.

The Port of Bordeaux—continued

As a port of call, Verdon will in effect put Bordeaux upon the route of passenger and cargo-boats of regular lines, which pass the estuary of the Gironde, and will permit such vessels to perform rapidly at the river's mouth the operations of loading and discharge for which they could not spare time to go right up to Bordeaux. These ships can thus, at the cost of a mere break of a few hours by calling at Verdon, place Bordeaux on their itinerary and tap the stream of passengers and valuable goods proceeding from or into Bordeax and the neighbouring regions of the South-West, the Centre and the South of France.

At the Verdon jetty, which offers on both sides a depth of 15 metres (nearly 50 ft.) at low water, there can be moored the largest vessels afloat.

At the same time, owing to the recent dredging of a new channel into the river, called the "*Grande Passe de l'Ouest*" (Great West Channel) now 10 metres (34 ft.) deep at low water, the crossing of the bar in the estuary and the arrival at Verdon take place under very safe conditions at all states of the tide, so that on this account no hindrance can arise for boats that call here.

* * * *

With the double advantage accruing from the new West Channel and from the outport of Verdon, the port of Bordeaux now offers to passenger liners and fast cargo-carriers facilities second to none that can be found in the most progressive ports of the world.

Death of Sir William H. Raeburn

A Noted Shipowner

BY the sudden death of Sir William H. Raeburn, Bart., at his Helensburgh residence, there is removed one of the outstanding personalities in the shipping world. For close on twenty years Sir William Raeburn was actively identified with the shipping industry, and it may be safely said that in his knowledge of its affairs, its difficulties, its shortcomings and its requirements, he was an outstanding figure-head, particularly during the latter half of his life.

Sir William was Managing Director of Messrs. Raeburn and Verel, Ltd., Glasgow—Managers of the Monarch Steamship Co. He was essentially a "tramp" owner, and perhaps no one contributed more towards elevating the position of "tramp" services in the British Mercantile Marine than he. His career was indeed a long and distinguished one.

Born at Glasgow in 1850; twenty-three years after he became a partner in the shipping business of Dunn and Raeburn, Glasgow, afterwards changed to Raeburn and Verel, and was actively engaged in his office in the control of its affairs only three days before his death, at the age of 84. He was President of the Chamber of Shipping in 1916 and 1918, and one of the founders of the Shipping Federation, and for twenty years Chairman of the Clyde District Committee. On the formation of the Merchant Shipping Advisory Committee, in 1908, he became a member, and Vice-Chairman of the British Corporation Classification Society, and was elected a member of the National Maritime Board. He also served for a term as Chairman of the Clyde Steamship Owners' Association. In 1918 he was elected Unionist Member of Parliament for Dumbartonshire, and represented the constituency until 1923, when he retired. During his term of service at Westminster he championed strongly the cause of shipowners and of shipping generally, and also that of Harbour Authorities, and was looked upon as the recognised spokesman of these interests, while he also took an active part in the shaping of industrial legislation of all kinds.

On his retirement in 1918, as President of the Chamber of Commerce, he received his Knighthood—a well-deserved honour. During his term of office as President from 1916-18 the shipping industry passed through one of the most critical periods of its history, and Sir William Raeburn played an important part in Parliament in connection with the many difficult problems raised in connection with questions of Government control.

In 1923 he had conferred upon him the additional honour of a Baronetcy, a fitting recognition of his long continued public work and services to the country and to the industries with which he was associated.

Clyde Trust Association.

Distinguished as his services undoubtedly were in connection with these activities, perhaps his greatest work in life was that of his association with the affairs of the Clyde Navigation Trust, of which he was, for over forty years, a member, joining the Board in 1887. For years he was Deputy-Chairman, and on the retirement of Sir Thomas Mason from the Chair he was unanimously elected to fill this position in 1919, and for the next ten years presided over the affairs of the Trust in a manner which met with the commendation of not only the members of his Board, but shipping and business interests throughout the country. His outstanding works were the building of the King George V. Dock at Shieldhall, and the Clyde Navigation Act of 1929, both of which presented difficulties often only surmounted by the genius and ability of the man at the helm. Nor was this all. Sir William Raeburn was, if nothing else, a man of vision and wide outlook. It was perhaps due to him more than anyone that the Clyde Trust broke away from tradition and realised the necessity with the growing years of competition and trade depression of moulding its policy to meet the changed conditions of present times. With this realisation came the policy of developing trade and industry of not only the Port but the Markets and the locality which it serves within its ambit. In this connection, Sir William, with his far-seeing vision, readily saw the opportunities provided for the development of trade between Scotland and the Dominions and Colonies of the Empire, particularly in view of the change in outlook, both by the Government and the public, to this question generally. The results of the adoption of this policy are eloquently borne out in the report submitted to the Clyde Trust which we review to-day.

Although Sir William retired in 1929 to make way for a successor, he still maintained a close interest in the affairs of the Clyde Trust. By his death the Clyde Trust, Glasgow, and the shipping fraternity as a whole, loses a man of courage and ability whom it could ill afford to spare in these difficult times, and whose outstanding qualities it will be very difficult to replace.

Sir William is survived by his widow, a daughter of the late Dr. Peel-Yates, and one son, Mr. W. Norman Raeburn, the distinguished K.C., and two daughters. His youngest son, Lieut. Alfred A. D. Raeburn, of the Highland Light Infantry, was killed in action during the War, and his second son, Sir Ernest Manifold Raeburn, K.B.E., who was knighted for War services—died in New York, in 1922, when acting as representative of the British Government in winding up outstanding matters between this country and the United States in connection with the utilisation of shipping during the War.

A Handbook on Cement Gun Work.

The Concrete Proofing Co. Ltd., 100, Victoria Street, Westminster, S.W.1, have recently issued a most interesting publication dealing with Gunite and the various uses to which Gunite can be applied.

The book, which is exceedingly well produced, contains 48 pages. Chapter I. deals with the reconditioning of reservoirs and water towers; Chapter II. describes the repair of marine structures; Chapter III. is devoted to tunnel linings; Chapter IV. to culvert linings; and Chapter V. describes the resisting powers of Gunite to abrasion, corrosion, and fire. The book contains illustrations of the various works undertaken.

Copies of this book can be had by any of our readers if they apply to the Concrete Proofing Co. Ltd., 100, Victoria Street, Westminster, S.W.1, and mentioning *The Dock and Harbour Authority*.

London's Shipping.

During the week ended February 23rd, 1,013 vessels, representing 1,068,787 net register tons, used the Port of London. 489 vessels (837,714 net register tons) were to and from Empire and Foreign ports and 524 vessels (231,073 net register tons) were engaged in coastwise traffic.

Tilbury Passenger Landing Stage.

During the month of January, 30 vessels, totalling 300,713 gross register tons, used the Tilbury Passenger Landing Stage.

*United States and Canadian Ports Statistics**

Vessel Entrances and Clearances at the Port of New York.

STATISTICS of vessel entrances and clearances, compiled by the Marine Division of the office of the Collector of the Port of New York for the month of December, show increases in entrances and clearances of ships in foreign trade over the preceding month, declines in coastwise trade and more entrances but few clearances in intercoastal trade.

Comparative figures for the two months follow:—

FOREIGN TRADE ENTRANCES.

	November		December	
Foreign direct—	Vessels	Net Tons	Vessels	Net Tons
In ballast	9	65,012	10	88,505
Bulk cargo ...	55	138,250	49	136,302
General cargo ...	92	665,999	102	801,973
Total	156	869,261	161	1,026,780
Foreign via other ports—				
In ballast	14	38,932	20	46,190
Bulk cargo ...	7	18,473	3	8,225
General cargo ...	53	230,363	62	257,339
Total	74	287,768	85	311,754
American direct—				
In ballast	—	—	3	4,293
Bulk cargo	16	67,330	23	102,407
General cargo ...	71	320,852	76	362,997
Total	87	388,182	102	469,697
American via other ports—				
Bulk cargo	1	3,213	1	3,450
General cargo ...	62	228,240	53	184,716
Total	63	231,453	54	188,166

FOREIGN TRADE CLEARANCES.

	November		December	
Foreign direct—	Vessels	Net Tons	Vessels	Net Tons
In ballast	32	159,268	44	282,310
Bulk cargo	12	25,228	5	6,514
General cargo ...	114	752,989	110	738,258
Total	158	937,485	159	1,027,082
Foreign via other ports—				
In ballast	18	33,686	18	44,450
Bulk cargo	3	9,987	3	9,210
General cargo ...	65	286,739	69	324,623
Total	86	330,412	90	378,283
American direct—				
In ballast	22	88,685	20	93,354
Bulk cargo	2	10,178	—	—
General cargo ...	95	415,921	103	455,763
Total	119	514,784	123	549,117
American via other ports—				
Bulk cargo	3	10,889	—	—
General cargo ...	43	146,416	41	139,338
Total	46	157,305	41	139,338

DOMESTIC TRADE ENTRANCES.

	November		December	
Intercoastal—	Vessels	Net Tons	Vessels	Net Tons
Bulk cargo	16	80,521	20	101,722
General cargo ...	63	251,576	65	263,631
Total	79	332,097	85	365,353
Coastwise—				
In ballast	4	5,359	3	10,142
Bulk cargo	7	7,346	2	1,594
General cargo ...	150	439,972	139	417,524
Total	161	452,677	144	429,260
Non-contiguous—				
Bulk cargo	—	—	1	3,450
General cargo ...	22	71,606	18	53,594
Total	22	71,606	19	57,044

DOMESTIC TRADE CLEARANCES.

	November		December	
Intercoastal—	Vessels	Net Tons	Vessels	Net Tons
In ballast	14	76,870	12	66,331
Bulk cargo	6	23,230	3	10,746
General cargo ...	65	267,409	66	275,694
Total	85	367,509	81	352,771
Coastwise—				
In ballast	1	768	—	—
Bulk cargo	4	6,587	—	—
General cargo ...	177	510,578	156	473,721
Total	182	517,933	156	473,721
Non-contiguous				
General cargo ...	9	26,093	10	26,748
Total	9	26,093	10	26,748

Nationality of Ships Entered and Cleared.

Vessels entered at New York from foreign ports during December were divided by flags as follows:—

Flag	Vessels	Net Tons
Belgium	3	10,114
Brazil	2	7,039
Danzig	3	18,994
Denmark	5	17,131
France	5	64,948
Germany	18	155,750
Great Britain	99	609,127
Greece	1	3,051
Holland	14	71,054
Honduras	4	8,456
Italy	9	119,574
Japan	15	67,088
Norway	47	109,667
Panama	5	14,110
Poland	1	3,940
Spain	6	26,890
Sweden	9	31,611
America	156	657,863
Total	402	1,996,407

Vessels cleared at New York for foreign ports during December were divided by flags as follows:—

Flag	Vessels	Net Tons
Belgium	3	10,100
Brazil	1	2,886
Danzig	3	18,984
Denmark	7	21,610
France	5	64,948
Germany	20	166,040
Great Britain	100	644,415
Greece	2	5,998
Holland	17	80,847
Honduras	4	8,456
Italy	9	119,574
Japan	17	75,435
Norway	49	110,138
Panama	6	15,644
Poland	1	3,940
Spain	5	22,397
Sweden	9	33,953
American	164	688,455
Non-contiguous	10	26,748
Total	432	2,120,568

Exports of Grain at the Port of New York.

The volume of grain received at the Port of New York in December, 1933, was 7,449,353 bushels, which is the largest monthly volume received since November, 1931. It is 83 per cent. greater than the receipts of December, 1932. The receipts by rail were 5,449,500 bushels, while 1,999,853 bushels were routed to the port via the canal.

RECEIPTS OF GRAIN—BUSHELS.

	December		Net Change	
	1933	1932	Amount	Per Cent
All Routes ...	7,449,353	4,069,677	+3,379,676	+ 83.0
Rail	5,449,500	809,500	+4,640,000	+573.2
Canal ...	1,999,853	3,260,177	—1,260,324	— 38.7

The total volume of grain receipts for the calendar year, 1933, was 29,295,114 bushels, as compared with 39,904,677 bushels in 1932, a decline of 27 per cent. The canal movement amounted to 20,146,042 bushels, being a decline of 26 per cent., while the rail movement was 7,513,800 bushels, a decline of 41 per cent. During the year 1,635,272 bushels were received from elevators at Albany. There were no shipments of grain from Albany to New York prior to 1933.

*Reproduced by kind permission of "Shipping Register and World Ports," Montreal and New York.

United States and Canadian Ports Statistics—continued

RECEIPTS OF GRAIN—BUSHELS.

	Calendar Years 1933	1932	Net Change Amount	Per Cent.
All Routes ...	29,295,114	39,904,677	—10,609,563	— 26.6
Rail	7,513,800	12,758,300	— 5,244,500	— 41.1
Canal ...	20,146,042	27,143,112	— 6,997,070	— 25.8
River	1,635,272	.....	+ 1,635,272	.....
Coast ...	.....	3,265	— 3,265	—100.0

The visible supply of grain at the Port of New York in elevators and afloat on December 30th, 1933, was 7,081,000 bushels, as compared with 5,417,000 bushels on approximately the same date last year, an increase of 31 per cent.

VISIBLE SUPPLY—BUSHELS.

	Dec. 30 1933	Dec. 31 1932	Net Change Amount	Per Cent.
All Grain	7,081,000	5,417,000	+1,664,000	+30.7
Wheat	5,975,000	3,965,000	+2,010,000	+50.7
Barley	34,000	.....	+ 34,000	+ ....
Corn	756,000	717,000	+ 39,000	+ 5.4
Oats	210,000	187,000	+ 23,000	+12.3
Rye	106,000	548,000	— 442,000	—80.7

Total exports of domestic grain and Canadian grain in transit at the Port of New York in the year 1933 amounted to 20,763,000 bushels, in comparison with 41,858,000 bushels in 1932, a decline of 50 per cent. Exports of domestic grain fell off 94 per cent., while Canadian grain in transit dropped 32 per cent.

EXPORTS OF GRAIN—BUSHELS.

	Years 1933	1932	Net Change Amount	Per Cent.
Domestic and Canadian Grain	20,763,000	41,858,000	—21,095,000	—50.4
Domestic Grain ...	772,000	12,688,000	—11,916,000	—93.9
Canadian Grain ...	19,991,000	29,170,000	— 9,179,000	—31.5

Value of Foreign Trade at North Atlantic Ports.

The foreign trade at Boston, New York, Philadelphia, and Baltimore in the month of November, 1933, showed increases over the same month last year. The gain was evident in both exports and imports at Boston, New York and Baltimore, while a decrease in exports occurred at Philadelphia. The following figures are from the records of the U.S. Department of Commerce.

EXPORTS.

	November 1933	1932	Net Change Amount	Per Cent
Boston ...	$ 1,553,010	$ 838,233	+$ 724,777	+87.5
New York ...	53,661,007	38,899,469	+ 14,761,538	+37.9
Philadelphia	2,788,458	3,747,911	— 959,453	—25.6
Baltimore ...	3,324,259	2,557,907	+ 766,352	+30.0

IMPORTS.

	November 1933	1932	Net Change Amount	Per Cent
Boston ...	$ 8,472,846	$ 5,652,060	+$ 2,820,786	+49.9
New York ...	66,785,175	51,826,170	+ 14,959,005	+28.9
Philadelphia .	7,539,840	6,117,702	+ 1,422,138	+23.2
Baltimore ...	4,053,968	2,485,312	+ 1,568,656	+63.1

EXPORTS AND IMPORTS.

	November 1933	1932	Net Change Amount	Per Cent.
Boston	$ 10,025,856	$ 6,480,293	+$ 3,545,563	+54.7
New York ...	120,446,182	90,725,639	+ 29,720,543	+32.8
Philadelphia ...	10,328,298	9,865,613	+ 462,685	+ 4.7
Baltimore ...	7,378,227	5,043,219	+ 2,335,008	+46.3

Commerce at Port Newark.

The volume of waterborne receipts at Port Newark in December, 1933, was 41,046 tons, as compared with 49,990 tons in that month in 1932, a decline of 18 per cent. The volume for the entire year, however, indicated a gain of 30 per cent. over the calendar year 1932.

Receipts of lumber by steamer and lighter in December amounted to 7,140,093 board feet, a drop of 30 per cent. from last year's figure of 10,244,208 feet. Shipments of lumber inland from Port Newark during the month were 6,958,670 feet, of which 2,513,057 moved by railroad, and 4,445,613 moved by truck. In December, 1932, the amount of lumber shipped inland from Port Newark was 9,978,322 board feet.

Thirty-seven steamers arrived during the month, in comparison with 36 in December, 1932.

WATERBORNE RECEIPTS AT PORT NEWARK.

	December 1933	1932	Net Change Amount	Per Cent
All Commodities (tons) ...	41,046	49,990	— 8,944	—17.9
Lumber (board feet) ...	7,140,093	10,244,208	—3,104,115	—30.3
Other than Lumber (tons)	30,336	34,624	— 4,288	—12.4

The calendar year, 1933, registered an increase of 25 per cent. in receipts of lumber by steamer and lighter, and an increase of 42 per cent. in receipts of cargo other than lumber over the previous year.

WATERBORNE RECEIPTS AT PORT NEWARK.

	Calendar Years 1933	1932	Net Change Amount	Per Cent
All Commodities (tons) ...	507,438	388,784	+ 118,654	+30.5
Lumber (board feet) ...	141,688,176	112,886,780	+28,801,396	+25.5
Other than Lumber (tons)	311,205	219,454	+ 91,751	+41.8

Imports of Petroleum and Petroleum Products at United States

The volume of crude and fuel oil imported at United States ports in the calendar year, 1933, was 45,149,000 barrels, as compared with 72,187,000 barrels in 1932, a decline of 37 per cent. The decline at Atlantic Coast ports was 34 per cent., and at Gulf ports, 84 per cent.

IMPORTS OF CRUDE AND FUEL OIL.
(Barrels.)

	Calendar Years 1933	1932	Net Change Amount	Per Cent.
Boston	927,000	2,291,000	— 1,364,000	— 59.4
New York	28,237,000	40,293,000	— 12,056,000	— 29.9
Philadelphia ...	9,814,000	10,226,000	— 412,000	— 4.0
Baltimore	3,112,000	6,983,000	— 3,871,000	— 55.4
Other Atlantic Ports ...	2,279,000	7,522,000	— 5,243,000	— 69.7
Gulf Ports	780,000	4,872,000	— 4,092,000	— 84.0
Total U.S. Ports ...	45,149,000	72,187,000	— 27,038,000	— 37.5

Increase Noted in Canadian Shipping.

Ocean-bound shipping from the ports of Saint John, New Brunswick; Halifax, Nova Scotia; Quebec and Montreal on the River St. Lawrence, and Vancouver, British Columbia, was fractionally greater in 1933, compared with 1932, despite a reduction of 48,450,000 bushels in the quantity of grain shipments which constitute Canada's bulk of exports. The tonnage of vessels cleared from Canadian ocean ports during the first 11 months of 1933 was 36,000 tons more than in the corresponding period of 1932.

These figures reflect the decided increase in the volume of exports of commodities other than grains which for the 11 months under review showed an increase of $41,693,935 over the previous year. The ports of Montreal and Quebec during the navigation season saw an increase of 783,742 tons in the tonnage of vessels cleared. The ports of Saint John, Halifax and Vancouver recorded slight reductions in clearances.

Considerable increases in the quantity of shipping in Canadian inland waters was also reported for 1933. The tonnage of vessels passing through the new Welland Ship Canal alone totalled over 8,390,000 tons, an increase of approximately 300,000 tons over 1932. The quantity of freight carried by these vessels amounted to over nine million tons, an increase of more than 673,000 tons.

Freight Tonnage via Welland Canal sets New High Record

Freight using the Welland Ship Canal during 1933 created a new high record with a total of 9,194,396 tons, exceeding the record made in 1932 by 656,936 tons, or 7.7 per cent., the Dominion Bureau of Statistics reports. All grains, except flaxseed, showed substantial decreases, aggregating 586,536 tons. Flour increased by 125,303 tons, bituminous coal by 514,835, coke by 64,163, iron ore by 119,734, pig iron by 22,960, cement, brick and lime by 63,410, and merchandise, including miscellaneous freight, by 273,792 tons, the Bureau states. The Canadian lock at Sault Ste. Marie was closed on December 1st, as against December 16th in 1932, but the United States locks remained open until December 14th. Due to a large increase in iron ore shipments, from 3,607,119 tons in 1932, which was the lowest since 1891, to 22,226,025 tons, and lesser increases in all other commodities except wheat, the total traffic showed an increase over 1932 of 19,827,001 tons, or 97 per cent. The decrease in wheat shipments during the season amounted to 8,509,394 bushels, or 255,279 tons.

Port of Quebec's Record Season.

Enjoying one of the most active years in its existence, the Port of Quebec, in the 1933 season, handled a total of 1,562,874 tons of freight, an approximate increase over 1932 of 769,629 tons.

The Commission's 4,000,000-bushel grain elevator also showed an increase in grain traffic, with deliveries totalling 16,716,529 bushels, an increase of 11,692,894 bushels over the preceding season. The grain is included in the import and export figures, which do not include the amount of lumber and timber handled.

The official report on the number of vessels docking at Quebec showed that there were a total of 1,063 vessels of all descriptions with a net register of 5,562,717 tons, as against 800 in 1932, with a net register of 5,193,758 tons.

Total imports last year, including grain, amounted to 942,962 tons, an increase over 1932 of 346,294 tons. Imports that year totalled 596,668 tons.

Aden Port Trust

The following are the returns for the month of December, 1933, of shipping using the Port:—

	No.	Tonnage
Merchant Vessels over 200 tons ...	129	568,695
,, ,, under 200 tons ...	2	324
Government Vessels	5	10,413
Dhows	117	4,952
PERIM.		
Merchant Vessels over 200 tons ...	21	56,373

The number of merchant vessels over 200 tons that used the Port in December, 1933, was 129, as compared with 124 in the corresponding month last year, and the total tonnage was 569,000, as compared with 541,000.

Excluding coal, salt, fuel oil and Military and Naval stores and transhipment cargo, the total tonnage of imports in the month was 12,200, and of exports 6,700, as compared with 9,900 and 6,100 respectively for the corresponding month last year.

The total value of imports, excluding Government stores, was Rs. 42,29,000/-, as compared with Rs. 51,22,000/- for December, 1932, and of exports Rs. 28,95,000/-, as compared with Rs. 33,56,000/-.

The total value of both imports and exports together was Rs. 71,24,000/-, as compared with Rs. 84,78,000/- for the corresponding month last year.

Imports during the month were above those for December, 1932, in the case of grain, pulse and flour, gums and resins, hardware, raw hides, raw skins, sugar, twist and yarn, manufactured tobacco; and below in the case of coffee, seeds, grey, white and printed or dyed piece goods, unmanufactured tobacco, and private treasure.

Exports were above those for December, 1932, in the case of grain, pulse and flour, gums and resins, raw hides, raw skins, sugar, twist and yarn; and below in the case of coffee, hardware, seeds, grey, white, printed or dyed piece goods, unmanufactured and manufactured tobacco, and private treasure.

TRADE OF THE PORT.

Article.	Unit	Imports.		Exports	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	2,914	58,285	0	0
Coffee	Cwts.	6,968	1,99,513	7,434	2,62,620
Grain, Pulse and Flour	,,	74,550	3,29,735	36,717	1,55,033
Gums and Resins	,,	6,541	87,051	3,283	53,160
Hardware	—	0	23,941	0	20,832
Hides, raw	No.	5,135	2,735	2,106	2,735
Oil, Fuel	Tons	40,825	10,20,625	0	0
,, Kerosene	Gls.	30,400	22,622	4,288	3,359
,, Petrol	,,	13,056	14,600	440	523
Salt	Tons	0	0	21,500	2,17,250
Seeds	Cwts.	1,494	10,708	1,219	10,143
Skins, raw	No.	492,706	2,61,760	525,170	3,89,299
Sugar	Cwts.	45,819	2,41,184	20,849	1,15,585
Textiles—					
Piece Goods, Grey	Yds.	1,902,290	2,38,115	3,945,660	4,96,432
,, ,, White	,,	375,128	64,420	297,658	46,164
,, ,, Printed or Dyed ...	,,	742,332	1,73,135	1,540,019	3,26,270
Twist and Yarn	Lbs.	282,300	1,04,960	283,468	1,02,551
Tobacco, Unmanufactured	,,	367,948	55,477	492,915	78,701
,, Manufactured	,,	60,530	59,540	18,680	13,037
Other Articles	No. of Pkgs.	70,374	10,66,574	26,942	4,80,134
Treasure, Private	—	0	1,94,058	0	1,21,462
Total ...	—	—	42,29,038	—	28,95,290

A New Ruston-Bucyrus Excavator

An interesting exhibit at the British Industries Fair at Birmingham was a new Ruston-Bucyrus Excavator which is known as the 10-RB. ¾ Yard Universal Excavator, and we are now able to give fuller particulars of this machine.

The 10-RB. ¾-yard Universal Excavator.

The chief features of this 10-RB. Excavator are its light weight with dependability and strength. This new machine weighs from 7-8 tons, according to the type of equipment used, and the light weight has been achieved by an entirely new conception of excavator design by the generous use of alloy steels and the judicious combination of castings and modern welded construction.

This light weight machine affords low ground pressure on the caterpillar tracks, high working and travelling speeds, and easy and cheap transportation.

The 10-RB. Excavator is available with any or all of the following equipments: shovel—positive crowd or luffing boom; dragline; drag-shovel; skimmer; grabbing crane; crane.

This new machine can operate as fast as a man can handle it, and its digging motions are not only fast but their relative speeds are co-ordinated to combine correctly in a fast operating cycle for continuous outputs.

The 10-RB. can be travelled like a tractor across soft ground, or up inclines of 1 in 4, by means of the low speed of ⅞ mile per hour; or on firm, level ground, with the high speed of 2½ miles per hour. Another advantage of this machine is its small overall dimensions, which allow it to travel through places where clearances are small.

A copy of the catalogue describing this excavator will be sent to any of our readers if they apply to Ruston-Bucyrus, Ltd., Excavator Works, Lincoln, England, and mentioning *The Dock and Harbour Authority*.

Coastwise Record.

A record has been set up by 16,513,572 net register tons of coastwise shipping using the Port of London during 1933.

Clyde Navigation Trust

The Clyde and Empire Trade.

A REPORT, which has aroused considerable interest and favourable comment among trading and shipping circles in Glasgow and the West of Scotland, was submitted at the last Monthly Meeting of the Clyde Navigation Trustees by Mr. Harold M. Ford, the Commercial Manager of the Clyde Trust, dealing with his operations for the year 1933, in connection with the development of trade with the Port and Markets of Glasgow and the Dominions and Colonies of the Empire. The report covers a wide field of activity, from which there has resulted a considerable increase in trade with certain Dominions, and also raises questions of importance regarding improvement of facilities at Glasgow for the handling of this new trade. It raises, among other questions, that of the adequacy and suitability of cold storage, and with it the possibility of the Clyde Trust considering the provision of suitable dock storage and also the provision of insulated vans for the conveyance of meat and perishable cargoes from the docks.

In his opening paragraph Mr. Ford states that the past year has witnessed a further material increase in the development of trade with those Empire countries with which he has been concerned.

Dealing with Australia, the report refers to a further record having been established in the number of vessels trading to Glasgow for the year, and also in the tonnage of goods imported. The number of vessels totalled 54, with a net register tonnage of 498,386—an increase of 15 vessels, 122,015 tons, compared with the previous year. The tonnage of goods imported increased from 114,015 tons to 129,653 tons, and the revenue derived from dues on ships and goods amounted to £25,166—an increase over 1932 of £4,453.

An important feature in connection with shipping facilities is reflected in the number of refrigerated vessels operating between Australia and Glasgow during the year, these totalling 26, as compared with 18 in 1932—an increase of eight; this figure alone representing four more vessels than the total number of all classes of shipping entering the harbour from Australia in 1927; these vessels being provided to cope with the increasing trade which is being built up with Glasgow in perishable products, such as butter, cheese, eggs, meat, fruits, etc.

To cope with the increasing demands of the Australian fruit trade in Glasgow, space was provided on 13 vessels during the fruit season—an increase of five vessels over 1932. Four years ago the imports of fresh fruit from Australia to Glasgow were nil. In the year under review, the imports totalled nearly a quarter of a million cases.

Mr. Ford also deals with the steps being taken to open up trade with Glasgow in Australian oranges, and to the co-operation of Messrs. A. Holt and Co., of the Blue Funnel Line, and Messrs. Cayzer, Irvine and Co., of the Clan Line, in providing increased shipping facilities, particularly in the second half of the year—these having been doubled.

During the year he opened up trade in Australian eggs, for which shipping space was provided, and resulted in over 1,000 tons of eggs being shipped to the port from Australia.

Shipments of grain showed a decrease of about 1,200 tons, but flour imports were increased by 8,700 tons. Up to five years ago the imoprts of flour from Australia to Glasgow had been a steady figure round about 21,000 tons per annum, but that import was doubled last year, due largely to the additional space provided by the Shipping Companies.

New Zealand Record.

The past year has also seen the highest increase in trade with Glasgow from New Zealand yet experienced. During the year 29 vessels—an increase of four—traded into the port; the in and out tonnage being 334,246 tons—an increase of 44,704 tons. The tonnage of goods imported totalled 38,786 tons, as compared with 26,126 tons in 1932, and the total revenue on ships and goods amounted to £13,678, as compared with £11,466 in 1932.

Meat imports had increased by 50 per cent., and imports of dairy produce by 40 per cent., whilst as compared with six years ago, shipping facilities had been doubled, with the result that Glasgow is now served with an average service of a boat about every twelve days.

Fruit imports from New Zealand had been somewhat disappointing, but it was hoped the coming season would see a decided improvement.

South Africa: Development Anticipated.

Definite progress, Mr. Ford states, was made in the past year in connection with the opening up of trade in the South African fruit industry in Glasgow. This industry, which he points out dates back only about some fifteen years, has during that period grown enormously, with the result that during the past year South Africa shipped to Great Britain over 3,000,000 packages of deciduous fruit, and two and a quarter million cases of citrus fruits. This production is still growing, and, given a normal season, these figures will materially increase in the coming year. In 1932 roughly 93 per cent. of this trade was shipped to Southampton, the balance of 7 per cent. being shared between London and Liverpool, with no shipments to Glasgow, practically the whole of the marketing being in the hands of London Houses. Last year London increased her imports from 3 per cent. to 16 per cent., and Liverpool from 3 per cent. to 6 per cent., the balance, with the exception of an isolated shipment to Glasgow, being held by Southampton.

For three years Mr. Ford has made unceasing efforts to open up and divert some of this trade to Glasgow, but without success. These efforts, he states, have all along received the wholehearted support of the High Commissioner for South Africa, Mr. C. T. te Water, who paid a visit to Glasgow to investigate the position in 1930. Last year, following on conference with Mr. te Water and various Ministers of the South African Government, arrangements were made whereby the Chairman of the Perishable Products Board for South Africa and the Shipping Manager for the South African Harbours, visited Glasgow to investigate the possibilities of trade, based upon the representations which had been made. The direct result of this visit was the diversion of a shipment of 25,000 cases of South African oranges to Glasgow.

Mr. Ford refers to an intensive campaign carried on in the press of South Africa by a series of articles and interviews, and among the producers and exporters, with a view to persuading them to open up business with Glasgow merchants and develop the market by a regular programme of direct supplies, emphasising the disadvantages of concentrating marketing and supplies on Southampton and London.

Mr. Ford expresses the view that had it been possible for him to establish personal contact with the growers and co-operative fruit firms in South Africa and Rhodesia this business might have been already established in Glasgow. He refers to the difficulties of shipping, but points to the endeavours which are being made to arrange for a programme of chartered vessels fortnightly to Liverpool and Glasgow to cater, in the first instance, for supplies of citrus fruit, and expresses his confidence that an initial programme of direct supplies to Liverpool and Glasgow will be initiated in 1934. Mr. Ford, however, issues a warning that unless Glasgow's own traders, who possess the goodwill and outlet on the market, are permitted to participate in this business, progress in the expansion of South Africa's trade in Scotland will be stultified.

Other operations cover investigations into the possibilities of shipping live cattle from Rhodesia to Glasgow, also opening up trade in certain classes of meat, and the development of trade in Southern Rhodesian fruit.

The report refers to action taken in connection with the establishment of Californian citrus fruits on the Glasgow market and points to definite progress last year having been made by the arrival of 10 shipments.

Considerable attention is also being given to reviving trade with Glasgow in certain timbers from Eastern Canada, and also the opening up of new fruit connections with Canadian fruit interests.

In the concluding portion of his report, Mr. Ford refers to the imports of frozen meat and dairy produce, and mentions that the cold storage capacity of the port was on occasions fully taxed during certain periods of the past year. With the possibility of still further progress being made in imports of perishable products, he states that the question of the adequacy and suitability of cold storage in Glasgow might within a short time become a matter of importance, if not of urgency, and with it the possibility of the Trustees considering the provision of suitable cold storage at the docks. Up to the present, such a step had not been warranted. Glasgow was, however, the only port among the large ports of Britain which had no cold storage facilities located either adjoining its docks or on its dock estate.

If the trade in perishable products increased as it was anticipated, it would be very necessary that adequate cold storage accommodation was made available.

Allied with this question had arisen that of transport for perishable products from the docks to the cold stores—a matter which was recently the subject of an attack on Glasgow's facilities in Marine Insurance circles in London and Liverpool. At present, all transport from the docks to cold stores is by ordinary motor or horse-drawn vehicles, whereas in London and Liverpool insulated meat vans are used to avoid any possible damage to the meat in transit. This question, Mr. Ford views as an important one, and he is taking it up with cold storage and transport interests in Glasgow, together with the various Dominion Produce Boards' representatives in London.

Clyde Navigation Trust—continued

Among other questions engaging his attention is that of the greater utilisation of the port as a distributing centre. The distribution of the bulk of Dominion trade which has been developed in the past few years is, he states, largely restricted to the City of Glasgow and the immediate vicinity. The question of supplying wider areas, embracing the East Coast of Scotland and the industrial area of Newcastle, which are at present drawing large supplies from London and Liverpool, and the South-West of Scotland and Northern Ireland, largely supplied from Liverpool, is being taken up in conjunction with the Railway Companies and trading interests concerned, both in Glasgow and in London.

Export Trade.

With regard to Scotland's export trade, the figures quoted in his report do not include exports. Owing to critical times and depressed conditions which have prevailed in most parts of the world, especially in Australia and New Zealand, states Mr. Ford, very little could be achieved towards the promotion of trade in Scottish manufactures, particularly with the operation of high tariffs which have virtually excluded many of our manufacturers from operating. With the gradual revision of these tariffs, following upon the Ottawa Conference, it is hoped that there will be a possibility of reviving our export trade and arranging agencies for Scottish manufacturers abroad. Already, he states, a number of additional inquiries in New Zealand and Australia are being followed up.

In this connection, Mr. Ford has obtained the co-operation of Sir Steven Bilsland, the President of the Glasgow Chamber of Commerce, with whom he is conferring as to the most suitable steps which might jointly be taken towards attracting overseas buyers to consider West of Scotland manufacturers, when placing their orders, instead of concentrating their buying so much upon London Houses. Each year, despite bad conditions, he states, large numbers of Dominion visitors come to Britain and transact the bulk of their business in the South and generally do not visit Glasgow. It is hoped that, with his assistance and co-operation of Dominion and Colonial High Commissioners and Agents-General, some means might be evolved whereby more of these visitors be brought into touch with Glasgow and Scottish manufacturers.

The report concludes with an appreciation of the valuable assistance and keen enthusiasm shown by Lord Provost Swan, and also of the co-operation of the Corporation Markets Committee.

The report was unanimously approved by the Trustees. Mr. James Morton, Convener of the Traffic Committee, in moving its adoption, paid a tribute to Mr. Ford's work, and expressed the satisfaction of the Trustees in the success which he had obtained. He proceeded to review the activities of other ports, pointing out that the London Authority had offices in Sydney for Australia and New Zealand, and were represented in New York and South Africa, while they had, in addition, paid correspondent representatives among various shipping agencies in different parts of the globe. Liverpool had offices in London and Birmingham, and had sent emissaries abroad on various occasions. Manchester had offices in London, Sydney and New York, and were represented in South Africa, whilst Southampton were similarly represented abroad. In addition, all the large ports sent emissaries from time to time to pay visits to Empire countries, with a view to promoting trade. With this position in view, it was very desirable that the Clyde Trust should take all means in its power to obtain their share of trade.

New Orientation of Trade.

There was always a difficulty in breaking new ground, as there were established channels of trade and established customs of doing business. Commodities could not come unless the ships were willing to come, and ships were not willing to come unless there were sufficient commodities to make it worth their while. It had therefore involved a great deal of diplomacy and tact in opening up a new orientation of trade.

The progress which Mr. Ford had reported was highly satisfactory and showed excellent results. The position regarding the two Dominions of Australia and New Zealand was somewhat remarkable. It was some five or six years ago since Mr. Ford had commenced to give his attention to the question of developing trade with our overseas Dominions and Glasgow. During that period there had been an aggregate increase of no less than 155 vessels, representing a tonnage of 1,319,384 tons, and a gross increase of imports from these countries of 307,744 tons on goods—the aggregate increase in revenue from shipping and goods amounting to £65,501.

For the benefit of our overseas friends he would like to point out that our markets were by no means saturated, and that so far as one could see there was no limit in sight to the possible development and expansion of their trade.

With regard to South Africa, he thought it would be very useful, and to their benefit, if those producers and others interested in their exports from South Africa would take into consideration what had been done on the Glasgow markets in connection with Australian and New Zealand exports. He hoped they would realise with a growing expansion of their production the necessity of finding new markets. That want could be largely supplied by the proper and systematic development of our markets here. Our traders were enthusiastic in their desire to assist South Africa in this development, and he hoped that before long a definite move would be made in this direction. He considered it most important that Glasgow's distributing area should be utilised to its fullest possible extent, and he was glad to say that this matter was being investigated.

With regard to export trade, this was a matter full of difficulty, but a wholehearted endeavour was going to be made to do what was possible to promote exports to our Dominions. The Clyde Trust was interested in the manufactures of Scotland, and particularly in taking any steps to promote employment for her workmen. Conditions prevailing during the past few years had, however, made it very difficult to get support for our export trade to some of our Dominions, but there were signs that these difficulties might not be so pronounced in the future. He understood that of all the ships in the Australian and New Zealand trades coming to Glasgow a large percentage were sailing away light. This was a serious matter, not only for the shipowners but for Dominion interests as well. There was no doubt whatever that if we could export in these ships goods to the Dominions the position with regard to shipping and freights might in the long run be very much improved.

In an interview given to our representative, a member of the Clyde Trust stated that the report was a most important document, and showed clearly the necessity for every effort being made by the Clyde Trust to improve its position among British ports and to contribute in every way possible to promote trade both ways with our Empire countries. It was the first time that the members of the Trust had been allowed an opportunity of knowing something of Mr. Ford's operations in this direction, with the exception of what they had gleaned from statements in the press from time to time. The results which had been obtained were truly remarkable, having regard to the general conditions prevailing during the past few years, and it was encouraging to know that whereas the trade of the port with most parts of the world had been on the downward grade for some years definite progress was being made in building up trade with the Dominions. This movement, which had been carried on so energetically, was deserving of every support from the trading interests of the West of Scotland, and also from our Empire friends, whose interests would be served by opening up business with Glasgow instead of attempting to do all their business through London. He was very glad to learn that Sir Steven Bilsland, as President of the Chamber of Commerce, was associating himself so closely with the efforts of the Clyde Trust.

Time Table for the Port of London

The monthly "Port of London Sailing List and Shipping Guide," the first issue of which has just been published, presents far more clearly than tabulated statistics the vast activities of the Port of London. Here, for the first time, is a time-table of shipping that will arrive and leave the port during the month ahead; the names of the ships, to whom they belong, where they go to, whence they come and their temporary home in the port conveys much more than a statement that over 1,000,000 net register tons of shipping use the port every week. There are recorded regular services to more than 330 Dominion and Foreign ports (mostly several sailings to each port during the month) and a further 200 ports throughout the world served by transhipment. Regular coastwise services from London to other ports of the United Kingdom and the Irish Free State fill six closely-printed pages. There are, of course, many more ships that use the port, whose movements it is not necessary to record or cannot be definitely ascertained in advance, such as oil tankers, colliers, fish carriers and tramp cargo vessels.

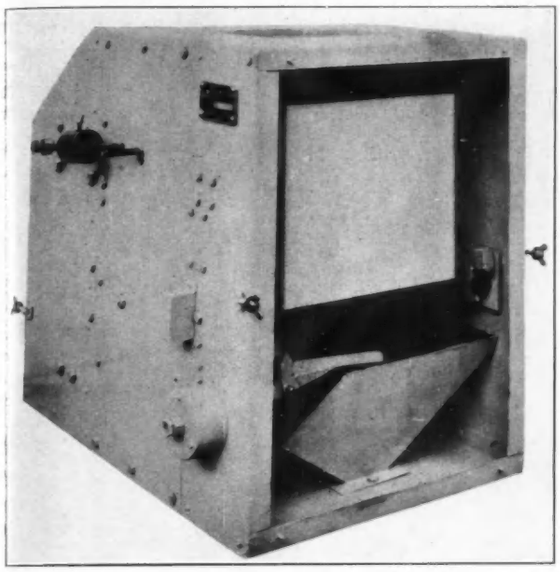
The new Guide should, in the words of the Foreword by Sir David J. Owen, General Manager of the Port of London Authority, "Provide a very useful handbook for those engaged in the shipping and commercial activities of London."

The handbook contains a good deal of general information, including a directory of official and other addresses and telephone numbers, a tide table and details of "How to reach the Docks."

Copies of the "Sailing List and Shipping Guide" are obtainable at the office of the publishers, the Port of London Authority, Trinity Square, E.C.3.

The British Industries Fair, Birmingham: Messrs. Henry Simon's Exhibit

The exhibits of Henry Simon, Ltd., Engineers, Cheadle Heath, Stockport, and of their subsidiary company, Turbine Gears, Ltd., comprised an interesting range of manufactures, including, among others, automatic weighing machines, soap-making machinery, conveying plant, various types of gears, gear units, couplings, etc.



"Reform" Automatic Weighing Machine used in connection with the Simon Patent "Synchroweigh" Blending System.

An interesting working exhibit was the "Synchroweigh" Blending System, which demonstrated Messrs. Simon's recently-developed method of blending materials by weight. In a number of industries the problem of mixing different materials in definite weight ratios is difficult of solution. It is generally realised that where materials of different values are blended or mixed it is important, both from a technical and economic point of view, that they should be proportioned by weight.

In a great number of industries the proportioning is carried out either by hand weighing, which is wasteful and unreliable, or through mechanical means of volume measurement, which obviously is incorrect owing to the variable densities of different materials. With the scientific trend towards balanced food values, proportioning of the materials by weight is really essential, and the same can be said, particularly in the case of valuable chemicals, powders, etc.

Appreciating the importance of this phase in the process of manufacture, Henry Simon, Ltd., have developed a system of automatically proportioning by weight and the installation working on Messrs. Simon's stand, demonstrated how this is performed. A typical system comprises a battery of specially designed electrically-synchronised automatic weighing machines, which may be either fixed or portable, an electro-magnetic totaliser and, where required, a pre-setting control unit which automatically cuts off the delivery when the quantity as pre-set has been weighed and deliverd, and starts or stops any process or conveying units as required.

The proportioning is carried out merely by placing weights on the weigh pans (denominated in percentages, the complement being equal to 100 per cent.) corresponding to the required percentage of the respective ingredients. The weighers can be tested for accuracy at any weighing, merely by lifting the compensating weight. Should the supply to any of the weighers run out, all the other weighers in the system are immediately stopped, so that there is no possibility of an incorrect blend. This new system attracted a good deal of attention, as the problem with which it deals is one which concerns a large number of industries.

Another working exhibit was the "Reform" Automatic Feed Stream Control apparatus for application to bin outlets, spouts, conveyors and the like. When a number of different materials are being mixed from running feeds, and where the failure of any of the sources of supply would spoil the ultimate blend, these units can be fitted to control the supplies. The control units are electrically synchronised, and should any one feed fail, they immediately stop all the feeds, and at the same time indicate that the supply has been cut off. They may also be arranged to shut down any conveyors, feeders or measures which are dealing with the materials. Messrs. Simon also exhibited one of their standard "Reform" Automatic Weighers, which are extensively used for weighing, delivering and recording such materials as coal, minerals, grain, wheat products, powders, etc. The type exhibited was fitted with their patent compensating device, which ascertains and compensates for the amount in transit, and also a patent interlocking mechanism which locks the feed gate in the closed position during the delivery of the material from the bucket.

On the section of the stand devoted to the products of Turbine Gears, Ltd., a wide range of gears manufactured by this Company and examples of speed-increasing and speed-reducing units, were shown. A range of worm gears and bevel units were exhibited, together with various types of double helical, single helical and straight gear wheels and bevel wheels. There were also examples of flexible couplings manufactured by Turbine Gears, Ltd.

Port of London Notes

Port of London Authority Election.

A Meeting of Electors was held on February 14th, at the Authority's Head Office at Tower Hill, E.C.3, for the purpose of receiving nominations of candidates for filling the vacancies caused by the triennial retirement on the 1st April next of the Elected Members of the Authority. Mr. J. D. Ritchie, Secretary of the Authority, who is Returning Officer for the purpose of the election, presided.

Election by Payers of Rates, Wharfingers and Owners of River Craft.

The Regulations provide that each nomination paper shall state whether the principal business of the candidate is or has been mainly connected with "Vessels other than River Craft" with "River Craft" or with "Goods."

The following nominations were received:—

	Nominations Received	Vacancies
Vessels other than River Craft ...	8	8
River Craft	1	1
Goods	8	8
	17	17

In accordance with the provisions of the Statutory Regulations, the following seventeen candidates were declared to be Elected Members of the Authority as from the 1st April, 1934.

Vessels other than River Craft:—Sir Frederick Charles Allen, Bt.; Louis Hamilton Bolton; Ronald Thornbury Garrett; David Jones, J.P.; Edward Aubrey Lloyd: William James McAlister; Archibald Maclean; Sir Alfred Henry Read, J.P.

River Craft:—William Lee Wrightson.

Goods:—Capt. Sir Ion Hamilton Benn, Bt., C.B., D.S.O., T.D.; Sir Arthur C. Cory-Wright, Bt., J.P.; Arthur Charles Davis, J.P.; Charles Seton Sinclair Guthrie; Cecil Wilfred Hodge; Sir Charles Campbell McLeod, Bt.; Owen Hugh Smith; Rt. Hon. Thomas Wiles, P.C.

Election by Wharfingers.

Only one candidate was nominated for the vacancy for a Member elected by Wharfingers, viz., Mr. W. J. Clarke, and he was declared to be an Elected Member of the Authority as from 1st April, 1934.

London's Shipping.

During the week ended January 26th, 1,195 vessels, representing 874,770 net register tons, used the Port of London. 451 vessels (666,324 net register tons) were to and from Empire and Foreign ports, and 744 vessels (208,446 net register tons) were engaged in coastwise traffic.

* * * *

During the week ended February 2nd, 877 vessels, representing 897,467 net register tons, used the Port of London. 433 vessels (680,465 net register tons) were to and from Empire and Foreign ports, and 444 vessels (217,002 net register tons) were engaged in coastwise traffic.

* * * *

During the week ended February 9th, 1,224 vessels, representing 1,040,025 net register tons, used the Port of London. 494 vessels (821,537 net register tons) were to and from Empire and Foreign ports, and 730 vessels (218,488 net register tons) were engaged in coastwise traffic.

* * * *

During the week ended February 16th, 868 vessels, representing 785,680 net register tons, used the Port of London. 404 vessels (588,883 net register tons) were to and from Empire and Foreign ports, and 464 vessels (196,797 net register tons) were engaged in coastwise traffic.

French Ports

Traffic Returns for the Year 1933

The traffic returns of French commercial ports for the year 1933 have just been issued.

They give the following statistics:—

Year	No. of Ships Entered	N.R. Tonnage Inward	Goods Inward	Goods Outward	Passengers Inward and Outward
1933	84,297	71,536,547	35,073,380	10,074,171	3,610,920
1932	82,797	69,454,108	34,460,263	9,649,132	3,529,051

Thus the year 1933 witnessed an increase in every form of traffic.

In particular, the improvement in goods traffic amounted to rather more than a million tons, made up of 613,000 tons inward and 425,000 tons outward. It is therefore significant, especially the outward increase, which represents nearly 5 per cent. over the traffic of the previous year.*

The improvement, however, is not spread uniformly throughout all ports, as may be seen by reference to the table hereunder, which gives the figures for every port having a total goods traffic (inward and outward) of at least 500,000 tons.

Ports	Ships Entered	N.R.T. Inward	Goods Inward	Goods Outward	Passengers Inward and Outward
Dunkirk					
1933	2,496	4,256,492	2,560,195	1,315,540	44,542
1932	2,728	4,464,089	2,850,824	1,313,704	49,181
Calais					
1933	2,396	1,374,380	774,181	311,250	414,235
1932	2,192	1,520,550	550,079	177,081	334,750
Boulogne					
1933	2,943	3,787,790	606,301	546,004	338,013
1932	2,793	3,976,638	559,288	484,911	332,662
Dieppe					
1933	1,543	1,047,172	592,438	168,709	213,423
1932	1,568	968,901	597,830	184,185	149,243
Havre					
1933	8,669	11,003,306	3,566,171	867,665	329,807
1932	8,679	10,087,679	3,044,666	891,234	373,148
Rouen					
1933	4,472	4,588,679	7,511,541	897,820	5,986
1932	4,373	4,426,813	7,359,451	733,826	4,404
Caen					
1933	1,348	609,271	1,134,262	500,199	11,956
1932	1,342	571,217	1,062,236	389,796	19,401
Cherbourg (1)					
1933	1,047	7,868,017	234,439	36,855	78,937
1932	1,112	8,383,245	230,314	42,567	104,302
Brest					
1933	5,082	1,116,941	600,678	136,147	183,793
1932	5,026	1,042,767	544,766	151,353	181,767
Nantes					
1933	2,565	1,815,173	1,885,955	430,986	389
1932	2,727	1,603,239	1,953,677	463,364	188
La Rochelle					
1933	3,481	1,170,243	824,849	78,849	104,646
1932	3,357	1,121,033	888,003	69,621	108,915
Bordeaux					
1933	2,843	4,156,246	3,190,373	915,745	66,798
1932	2,580	4,126,713	3,320,644	733,563	72,035
Bayonne					
1933	373	292,116	495,597	60,998	—
1932	384	277,310	457,702	63,016	—
Cette					
1933	2,375	2,103,531	1,282,336	296,124	1,029
1932	2,132	1,855,761	1,265,683	248,044	325
St. Louis-du-Rhone					
1933	895	709,386	380,889	154,966	—
1932	829	679,886	389,977	162,363	—
Marseilles					
1933	8,753	15,867,352	5,802,914	2,418,973	668,301
1932	9,099	15,627,069	5,752,331	2,569,090	696,284

*It may be recalled that the inward and outward figures for 1932, as compared with those for the maximum traffic year of 1929, showed reductions of 12 per cent. and 32 per cent. respectively.

(1) Though the goods traffic at the Port of Cherbourg does not reach 500,000 tons, it has been included in this list on account of its importance with regard to net registered tonnage.

On the basis of **Shipping**, it appears from the table that there is an increase of net registered tonnage in every port, excepting Dunkirk and Cherbourg.

The variation in **Goods** tonnage is more irregular:—

Inward.—The Channel ports, apart from Dunkirk which lost 291,000 tons and Dieppe which neither gained nor lost, all recorded appreciable advances. The most pronounced of these is noted at Havre, where it exceeded 500,000 tons, being essentially occasioned by the increased importation of petroleum. Calais, which benefited through the long lock-out at Dunkirk, gained 224,000 tons.

Rouen had an increase of 162,000 tons, spread over nearly all kinds of imports. On the other hand, the Atlantic ports are still losing traffic, except Bayonne. On the Mediterranean, Cette and Marseilles have made slight progress.

Outward.—Appreciable improvement at Calais (134,000 tons), Boulogne (62,000), Rouen (164,000), Caen (110,000); at Dunkirk, no change; slight set-backs at Dieppe, Havre and Brest. On the Atlantic, Nantes loses a little more, La Rochelle holds her ground, Bordeaux distinctly improves (182,000 tons), Bayonne shrinks a little. On the Mediterranean, while Cette gains, St. Louis-du-Rhone and Marseilles are still losing some trade.

As regards **Passengers**, the principal feature of the return is a distinct improvement in Anglo-French traffic, notably through Calais and through Dieppe, although long-distance traffic remains low in nearly every port.

The Port of Amsterdam

The position of the Port of Amsterdam can be seen from the following figures in regard to number of vessels and tonnage, and to the goods traffic arrived and sailed, as compared with the corresponding figures of last year.

SEAGOING VESSELS AND TONNAGE.

	ARRIVALS No.	Per Cent.	N.R.T.	Per Cent.	SAILINGS No.	Per Cent.	N.R.T.	Per Cent
Jan. 1933 ...	258		363,180		271		410,514	
,, 1934 ...	278		391,154		290		427,245	
	+20	+7·75	+27,974	+7·70	+19	+7·01	+16,731	+4·08
Dec. 1933 ...	289		409,441		283		419,516	
Jan. 1934 ...	278		391,154		290		427,245	
	—11	—3·81	—18,287	—4·47	+7	+2·47	+7,729	+1·84

SEAGOING GOODS TRAFFIC.
(In Tons of 1000 Kilos*).

	1 Import	2 Transit incl. in col. 1	3 Export	4 Transit incl. in col. 3	5 Total col. 1 & 3
Dec. 1932	354,734	63,636	149,873	42,378	504,607
,, 1933	333,838	58,338	115,693	52,285	449,531
	—20,896	—5,298	—34,180	+9,907	—55,076
	—5·89%	—8·33%	—22·81%	+23·38%	—10·91%
Nov. 1933	322,870	61,418	137,712	47,312	460,582
Dec. 1933	333,838	58,338	115,693	52,285	449,531
	+10,968	—3,080	—22,019	+4,973	—11·051
	+3·40%	—5·01%	—15·99%	+10·51%	—2·40%
Jan.-Dec. 1932 ...	3,490,794	628,450	1,562,592	392,282	5,053,386
,, 1933 ...	3,461,176	688,662	1,528,581	583,770	4,989,757
	—29,618	+60,212	—34,011	+191,488	—63,629
	—0·85%	+9·58%	—2·18%	+48·81%	—1·26%

* These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

Classified according to flag, the number of vessels which entered the Port of Amsterdam during January, 1934, was:—Dutch 138, British 42, German 43, Swedish 20, Norwegian 15, Danish 4, American 1, French 2, Greek 2, Spanish 1, Finnish 1, Italian 3, Estonian 2, Jugo-Slavian 2, Russian 1, Lithuanian 1.

Vessels laid-up at Amsterdam:—1st January, 1934,—19 vessels, measuring 72,538 tons gross; 1st February, 1933,—36 vessels, measuring 215,411 tons gross; 1st February, 1934,—16 vessels, measuring 64,253 tons gross.

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The Tilbury Contracting and Dredging Company, Ltd., of Tilbury House, Petty France, Westminster, London, S.W.1, have recently obtained from Messrs. Edmund Nuttall, Sons and Co. and John Mowlem and Co. (Joint), Ltd., a sub-contract for all the dredging work involved in their contract with the Southern Railway for the construction of the Train Ferry Dock in Dover Harbour, and the dredging work concerned is now in progress.

They have also just been awarded an important contract by H.M. Admiralty for carrying out the dredging of a Floating Dock Berth at Devonport Dockyard. This work will be commenced towards the end of April, and will involve dredging to a depth of 70-ft.

Apart from their constant regular contract work in the river and docks for the Port of London Authority, they have recently carried out a number of minor dredging contracts in the Thames, e.g., for Messrs. Ford Motor Company, Ltd., at Dagenham; the Gas Light and Coke Company, at Fulham; Messrs. Christiani and Nielsen, Ltd., at Deptford; etc.

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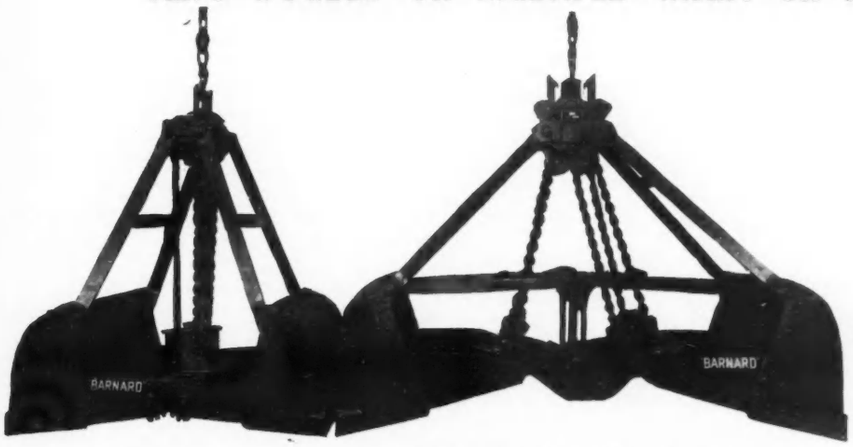

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Hull and the East Coast

Humber Conservancy Commissioners and the Victoria Pier Scheme.

WITH reference to the scheme of the Hull Corporation to effect alterations at the Victoria Pier, and to construct a floating landing stage for the greater convenience of the steam ferry across the river Humber, the Humber Conservancy Commissioners have decided to apply to the Ministry of Transport for certain amendments. These are mainly to the effect that no deviations shall be made without the consent of the Conservancy Board; that the pier-master's jurisdiction shall be subservient to the Board, and that the lighting arrangements during construction and permanent lights shall be such as the Board shall direct. The second schedule in the scheme has been left blank, but as the Hull Corporation and the London & North-Eastern Railway, who are jointly concerned, can enter into further agreements, the Conservancy Board are desirous of learning what any such agreements are likely to be. It is, however, presumed that they will apply to the construction, maintenance and user of the works, the collection by the Railway Company of rates authorised by the scheme, and the payment of compensation in respect of expenditure to be incurred by the Railway Company in effecting the proposed improvements of their ferry service across the Humber in the event of a road-bridge or tunnel being constructed by the Hull Corporation within 15 years after the completion of the works. It is also suggested that such agreements will possibly provide for the carrying out of any necessary dredging by the Railway Company in the vicinity of the floating landing stage, and that if this is so, the Board desire that provision should be made that any dredging or depositing of material in the Humber should be subject to their approval. A copy of the objections sent to the Ministry of Transport has also been submitted to the Town Clerk of Hull and the Board of Trade. The cost of the scheme, so far as it concerns the Hull Corporation, is estimated at £35,000, and to the London & North-Eastern Railway, who are undertaking works at New Holland on the Lincolnshire side, and the provision of new ferry steamers. £90,000.

Scarborough Corporation's Proposal to take over Financial Control of Harbour.

A solution of the difficulties of the Scarborough Harbour Commissioners appears to be in sight, a proposal now having been made by the Scarborough Corporation to the Commissioners " to enter into negotiations with them for the financial control of the Harbour." The offer of the Corporation was to acquire the undertaking for a sum equal to the indebtedness of the Commissioners to the Corporation at the date of completion—approximately £60,000. At the annual meeting a suggestion was made by the new chairman that a loan should be secured to repay the indebtedness to the Corporation, with a view to borrowing at a lower rate of interest. But this appears to have given place to new proposals, which have, in the past few weeks, been the subject of correspondence and negotiation between the two parties. In the result, a meeting has been held of the Finance Committee of the Corporation, attended by members of the Harbour Commissioners, at which draft proposals relating to the future constitution of the Harbour Commission and the control of the finances and management of the harbour undertaking were discussed. In outline, the scheme lays down the principle that life commissioners should cease, and that a new commission shall be appointed annually, consisting of 12 members, viz., the Mayor, seven Corporation Commissioners, two registered shipowners, and two payers of harbour dues. These Commissioners would manage the harbour and submit each January estimates of their expenditure from the following April to March 31st of the next year. It was also suggested that there should be other provisions for the control of expenditure consistent with independent management by the Commissioners, and that the Corporation should also have power to see that all receipts are collected. The Commissioners would not have power to borrow money or to lease the harbour, except with the consent of the Scarborough Corporation. When this draft was considered, two suggestions were made by the Commissioners present, viz.: (1) That it should be provided that the Corporation nominees need not be members of the Corporation, that is to say, they shall be either representatives of ratepayers by being on the Town Council, or nominees appointed by representatives of ratepayers; and (2) That the present life Commissioners (or such of them as wish to remain Commissioners) should be continued as such, but vacancies shall not be filled. The matter has yet to be considered by the Harbour Commissioners, and details to be finally settled before the scheme will go to the Town Council for approval. As at present constituted, the Scarborough Harbour Commission consists of 12 life Commissioners (registered shipowners and payers of harbour dues) and six members of the Town Council, together with the Mayor for the time being. As reported in a previous issue of *The Dock and Harbour Authority*, Scarborough Harbour provides a substantial revenue which, however, is very largely swamped by the heavy loan charges, much of the money having been borrowed from the Scarborough Corporation at high rates of interest. At the January meeting of the Commissioners, Councillor Jackson, who presided, referred to the upward tendency of the revenue of the undertaking which, he said, made the outlook for the near future hopeful. Mr. A. Bellwood was welcomed to fill the vacancy caused by the retirement of Captain J. H. Gibson, and he signed the usual declaration. A vote of thanks was accorded Captain Gibson for the many years of valuable service rendered by him.

Scarborough to have Electric Fog-horn.

After visiting Bridlington (East Yorkshire) and inspecting the electric fog-horn in use there, the Scarborough Harbour Commissioners have authorised a sub-committee to instal a similar instrument, at an estimated cost of £100, in place of the fog-horn introduced a few years ago and since found unsuitable. This has been ordered from the makers, and is intended to be fixed on the lighthouse tower immediately below the balcony facing the sea. It is understood that the new electric fog-horn will have an effective range of two miles.

Humber Coal Exports.

The following figures show the quantity and average declared value per ton f.o.b. of coal exported from the Humber ports during 1933.

	Tons	s.	d.
Immingham	1,549,833 ...	13	11
Hull	921,450 ...	15	0
Goole	697,177 ...	14	3
Grimsby	85,740 ...	12	6

The corresponding figures for 1932 were:—

	Tons	s.	d.
Immingham	1,551,192 ...	13	9
Hull	920,239 ...	14	8
Goole	729,525 ...	13	10
Grimsby	134,935 ...	14	1

Immingham Dock Statistics.

During the month of January, 1934, a total of 104 vessels, representing a net registered tonnage of 107,418, used Immingham Dock, including 14 vessels totalling 22,349 net registered tons using the Western Jetty coaling berth; as compared with January, 1933, when 113 vessels totalling 143,088 net registered tons used the port, including 16 vessels totalling 33,275 net registered tons using the Western Jetty.

The Port of Halifax

Shipping.

During the month of December, 1933, a total of 493 vessels entered and cleared the Port of Halifax, as compared to 503 for December, 1932, and 561 for December, 1931. The net registered tonnage is reported at 1,088,022 tons, as compared to 951,471 tons for December, 1932, and 1,028,615 tons for December, 1931. The number of vessels engaged in the Trans-Oceanic service entering and clearing during the month of December, 1933, totalled 230, as compared to 187 for December, 1932, and 173 for December, 1931. The number of vessels engaged in the Coastwise trade entering and clearing during the month of December, 1933, totalled 263, as compared to 316 for December, 1932, and 388 for December, 1931.

Since January 1st, 1933, the total number of vessels arriving and departing at the Port of Halifax is reported at 5,893, as compared to 5,839 for the same period of 1932, and 6,138 for the twelve months of 1931.

Cargo Tonnage.

The total cargo tonnage handled inward and outward during December, 1933, is reported at 215,067 tons, as compared to 118,113 tons for December, 1932, and 157,333 tons for December, 1931. The total cargo tonnage reported for the twelve months of 1933 for the Port of Halifax totalled 1,751,826 tons, as compared to 1,458,083 tons for 1932, and 1,591,066 for 1931.

Passengers and Mail.

The total number of passengers landed and embarked at the Port of Halifax during the month of December, 1933, is reported at 2,610, as compared to 3,250 for December, 1932. Since January 1st the passenger traffic is reported at 32,428, as compared to 58,238 for 1932.

The quantity of mail handled during the month of December, 1933, is reported at 36,852 bags, as compared to 37,314 bags for December, 1932. During 1933 a total of 108,282 bags of mail were handled, as compared to 113,403 for 1932.

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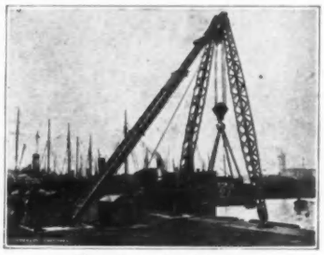

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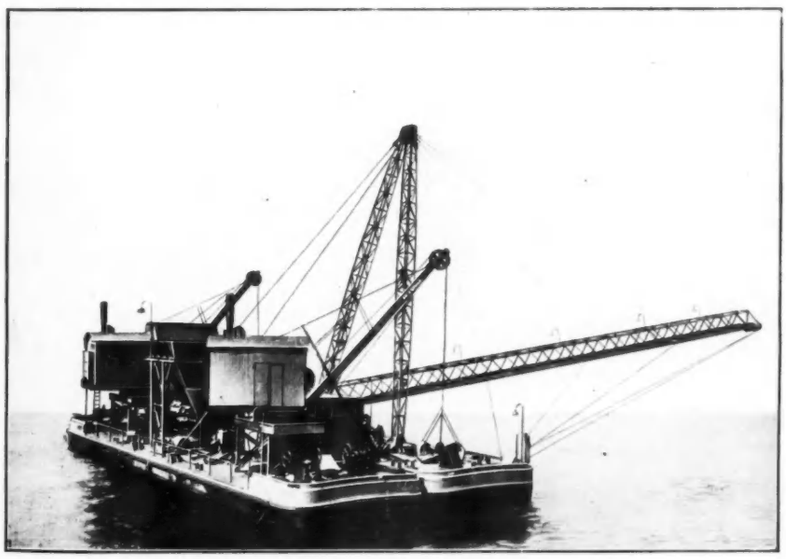

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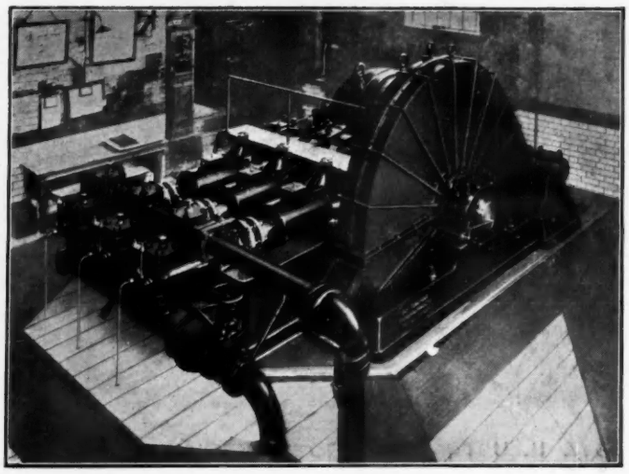

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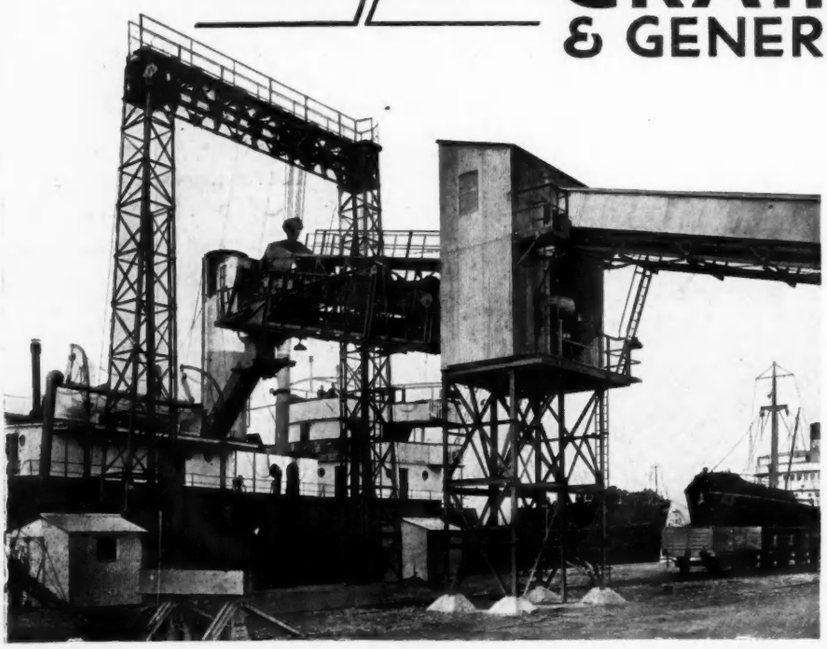

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